FOUNDATIONS FOR
A SCIENCE OF PERSONALITY

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FOUNDATIONS FOR A SCIENCE OF PERSONALITY

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TABLE OF CONTENTS

PREFACE xi

I. THE IDEA OF A SCIENCE OF PERSONALITY 1

The holistic approach. Possibility and value of a theory of personality. The problem of analysis in relation to the holistic approach. Requisites for a holistic theory of personality

II. THE TREND TOWARD INCREASED AUTONOMY 20

The organism as a dynamic whole. The hypothesis of immanence. A preliminary definition of the general dynamic trend of the organism. Definition of the biological total process as a trend toward increased autonomy. Some implications of the above theory

III. THE PSYCHOLOGICAL FUNCTIONS 56

The symbolic character of psychological processes. Symbolization in perception, imagination, and thinking. Symbolization in emotion and conation. The biological significance of symbolization. The relation between psychology and the science of personality. Summary

IV. ORGANISM AND ENVIRONMENT 88

Organism and environment are not separable as structures in space. The dynamic definition of the relationship between organism and environment. The concept of the biosphere: the subject-object differentiation. The derivation of the field of certain sciences *from the biosphere by parenthetic exclusions: A. Derivations from the subject; B. Derivations from the environment. The symbolic elaboration of the subject-object relationship: self-awareness. The relative autonomy of the conscious self: a discrepancy in the subject-object organization. Summary*

V. BIOSPHERIC DYNAMICS 124

The biosphere as a system of tensions. The system of biospheric tensions viewed with the subject as the point of reference: A. Drives and cravings; B. Attitudes. The organization of attitudes. The system of biospheric tensions viewed with the object as a point of reference: A. Valences and demand qualities; B. Biospheric relevancies; C. Axiomatic values. Summary

VI. THE TREND TOWARD HOMONOMY 167

The concept of homonomy. Social integration: A. The symbiotic level; B. The cultural aspect of interhuman integration. The subject-matter of social psychology. Summary

VII. SPECIFIC DYNAMIC TRENDS 208

Structurally defined functions: A. Standard reactions to standard needs; B. Standard reactions to standard distress situations; C. Auxiliary functions. Freely set or "choice" functions: A. Specific expressions of the trend toward increased autonomy (Drive for action, for superiority, for acquisition, for exploration, for integrity); B. Specific manifestations of the trend toward homonomy; C. Subsidiary tendencies (Drive for security, for orientation, for integration). Further possibilities of generalization with regard to biospheric dynamics. Summary

VIII. THE PROBLEM OF INTEGRATION 243

The structure of wholes. System and Gestalt. The material for personality integration. The dimensional domain of personality organization. The differentiation of wholes. Holistic interpretation of the stimulus-response pattern. The range of variation of the positions in a system. The continuity of action in a hierarchy of systems. Summary

IX. DISTURBANCES OF INTEGRATION 303

One part may belong to various systems. Setting and shifting of systems. Interference of systems: symptoms and sequelae (Symptoms of pressure, of intrusion, of mutual invasion). Segregation of systems. The concept of bionegativity. Causation and system action in states of disturbed integration. Summary

X. THE COURSE OF LIFE AS A GESTALT 343

The time aspect of personality and the biographical method. The course of life as a Gestalt. Holistic evolution and chance in the life course. Summary

EPITOME 374

INDEX 383

PREFACE

THE need for a broad theoretical frame of reference for the integration of the manifold aspects of human nature and behavior into a unified picture of man gave the incentive for the present study. It was intended to construct a consistent system embodying the principles that were thought to be fundamental for the problem of personality. What is offered here is primarily a somewhat extensive outline liable to and in need of more detailed elaboration. The applicability of this theory in formulating problems for empirical investigation and interpreting empirical data, which still needs testing, is the sole criterion by which the merit of this or of any other theory should be judged.

Thesis of the book

This book is not addressed to any particular group of specialists. It deals with general problems of personality, problems on which psychiatrists, biologists, psychologists, and social anthropologists can competently and profitably exchange views. For this reason, terms and examples that assume technical knowledge on the part of the reader have been avoided as far as possible.

In accordance with the attempt to present a theory of personality in a closely knit system, the book has been so organized that each section is based on what goes before and prepares for what follows. It would, therefore, be scarcely profitable to read selected sections; the book may best be read and considered as a whole.

Citations have been used rather sparingly, although I am well aware that many of the ideas which are here presented have definite relations to other systems of thought. However, by way of facilitating the flow of the argument, digressions to point out differences from and similarities to other theories have been largely omitted.

Two small sections of the text (pages 327–333 and 243–261) with some minor changes have been published previously. One of these ~~sections~~ appeared under the title "The Concept of Bionegativity" in *Psychiatry,* vol. 1, no. 3, August 1938; another, "The Structure of Wholes," was published in *Philosophy of Science,* vol. 6, no. 1, January 1939. I wish to express my thanks to the editors of these journals for permission to reprint the articles.

The greater part of the contents of this book was presented early in 1937 at the Henry Phipps Psychiatric Clinic, Johns Hopkins University, and I am grateful to the staff, and especially to Dr. Adolf Meyer, for the valuable criticisms, suggestions, and encouragement which I have received. I am indebted to the members of the Research Staff of the Worcester State Hospital for many helpful comments.

A. A.

September 1941

I. THE IDEA OF A SCIENCE OF PERSONALITY

THE HOLISTIC APPROACH

IN all sciences which deal with living organisms the need increasingly makes itself felt for a radical reorientation in their foundations. The hope that life could be expressed and understood in terms of the physical sciences has largely been given up and at the same time scepticism has begun to creep in with regard to the possibility of a science of human personality. However, between these two extreme points of view a new attitude is gradually emerging. One begins to question the very foundation of our philosophy of science, the general validity of our present concept of science, and the reasonableness of our scientific ideals. Since the physical sciences were the ones which first reached a considerable degree of maturity, it was tempting to identify science in general with the physical sciences. It is still a widely held opinion that the study of a given field of phenomena is scientific only in so far as it approaches the ideal of the physical sciences. It is, however, premature and dangerous to form the concept of science in general on the basis of the physical sciences, for such a concept is too narrow to do justice to the total field of phenomena toward which one's desire for knowledge can be directed. New and broader theoretical orientation in science may be possible after all. This revives the hope that with the aid of new and proper concepts and methods it will be possible to make an adequate study of those fields which were impenetrable for the traditional physical-scientific ways of thinking.

One possible aspect of the proper approach to the study of the organism has already been rather definitely formulated. A number of scientists feel that the main obstacle to progress in the study of the organism lies in the traditional "atomistic" or "segmental" approach. The new motto which has arisen is that "the organism is a whole and should be studied as such."

The holistic approach,[1] which in the last analysis is an Aristotelian one, is penetrating ever deeper into the biological sciences, especially those sciences which are concerned with the human organism. The "organismic" theories of Haldane Biologist, Woodger, Ritter, A. Meyer (the German biologist), Bertalanffy, Uexküll, the psychobiology of Adolf Meyer, Gestalt psychology, the personalistics of William Stern, the theory of emergent evolution, the holism of Smuts of S. Africa, the sociological system of O. Spann are characteristic examples of this trend.

Since the basic idea of the holistic attitude is quite generally known, it will be sufficient here to indicate its meaning with but a single example. Let us draw on a surface a horizontal line A, and an oblique line B in such a manner that the two lines intersect. One can study and describe the properties of line A and those of line B. However, a knowledge of the whole resulting from these two lines, namely of the angle which the two lines form, does not emerge from such a study. The angle is something entirely new, and its properties cannot be derived from the properties of the lines which constitute it. The lines, for example, can be measured in centimeters, but the angle must be measured in entirely new units—degrees. Generalizing then, it can be stated that the study of parts cannot explain the whole, because the whole is something different from the simple summation of its parts—a statement which has become a commonplace.

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[1] The term "holism" was borrowed from Smuts (Jan ~~F. G.~~ Smuts, Holism and Evolution, New York, Macmillan, 1926). It is used here in the sense of "Gestalt," "totality," and similar expressions.

Against such considerations the objection is occasionally made that although the characteristics of a given whole may not be reducible to the attributes of the parts, they could be explained on the basis of the relationships between the parts. The problem, however, is much more complex than it would seem. We shall see (Chapter VIII) that the connection of parts within the frame of a whole is of a very specific kind and that this specific holistic connection cannot be resolved into relations. The novel character of wholes remains, even if it is translated into terms of logic.

The application of the holistic principle to the study of human beings has far-reaching implications. We have a number of sciences *related to* the person, but we do not have a science *of* the person. Human physiology, psychology, and sociology deal with artificially separated single aspects of the human organism, but, in spite of some promising starts, there does not as yet exist a science which studies the human person in his totality. If we admit that the human being is more than the mere aggregation of physiological, psychological, and social functions, that is, if the person as a whole has attributes which are neither the sum of the attributes of the parts nor deducible from the attributes of the parts, we must give up the hope that knowledge of the total person will ever emerge from segmental studies. Just as complete information concerning the two lines which form an angle does not give us any knowledge about the angle itself, so knowledge of physiology, psychology, and sociology cannot result in a science of the total person. This means that, for the study of the total person, there is needed not a mere combination of the results of those sciences which study single aspects of the person, but an *entirely new science.*

The need for such a basic science is keenly felt in psychiatry. Psychiatry is evidently an applied science, but of what basic science is it the application? Is it applied physiology? Applied psychology? Applied sociology? The psychiatrist may take one of these possibilities according to his personal preference or scientific bias but he is short-sighted indeed if he does not see that the other approaches cannot be legitimately excluded. One might say that psychiatry should not be the application of any one science, but a combined application of many sciences, such as physiology, psychology, sociology, and perhaps others. However, for the reason previously mentioned, one cannot hope that the combination of segmental approaches would overcome the difficulty. Such a combination would give only the sum of the knowledge gained by studying partial aspects but would not tell anything directly with regard to the person as such.

It is paradoxical, but unfortunately true, that psychiatry is the application of a basic science which does not as yet exist. Because of this lack of an adequate scientific foundation the psychiatrist has to deal with problems of aberrations of behavior to a large extent on a practical or "common sense" basis. Practical necessities of the moment may justify this procedure, but if psychiatry is to become more than a mere collection of rule-of-thumb principles, it needs a firm scientific foundation. An ideal psychiatry would be a well-founded science of the "abnormally" behaving person. This, however, presupposes a basic science dealing with the "normally" functioning person, in other words, a science of personality. The scope of a science of personality is, of course, much wider than to furnish a basis for psychiatry alone. It would have a central significance and serve as the foundation for all those sciences which deal with human beings from one or another specialized point of view.

The desirability of such a basic science has been expressed by many students in recent years. "Anthropology" would be a fitting name for it, were it not already reserved for a more specialized discipline. The same holds for the expression "human biology." The hybrid word "personology" has also been proposed. More appropriate is Adolf Meyer's term "ergasiology" and William Stern's "personalistics." However, since these latter two terms connote rather specific theoretical positions, it is preferable to use the more neutral expression, "science of personality."

POSSIBILITY AND VALUE OF A THEORY OF PERSONALITY

If the desirability of a science of personality is admitted, one could still ask whether or not the data available at present suffice to construct such a science. With reference to this question it should be remarked that new theories do not necessarily presuppose the discovery of new facts but sometimes only the seeing of old facts in a new light; for instance, the observed factual material for Newton's system was available long before the theory was formulated. The same thing is true of a large number of other scientific systems. In principle, at least, it is possible to found a theory of personality on the basis of our present knowledge of facts.

There is, of course, a considerable difference between establishing the theoretical foundation of a new science and building up a science in all its detail. There are problems which can be disentangled by intellectual operations alone after comprehending the old facts in a new way, but there are other problems which cannot be solved by any amount of thinking, and require new factual material. The purpose of the present study is to outline the general theoretical basis for a science of personality, while particulars are being left to later empirical studies. In spite of the fact that the present theory was formulated primarily to provide a working basis for psychiatry, specific problems, such as schizophrenia, delinquency, and suicide, will not be considered here. This study deals with general principles only and is intended to form the framework of a building which can be filled in with concrete material only by means of specific empirical investigations.

The utility of a theory consists essentially in that it serves as a guide, as a point of reference, for empirical studies, which otherwise are likely to result in an utterly chaotic and incoherent mass of data. The utility of a good theory is twofold: it allows us to question nature intelligently and offers a background for the interpretation of empirical data.

The accumulation and organization of knowledge in a planned study may be compared to the process of biological differentiation. Developmental processes go, as a rule, from an initial diffuse state to a state of greater differentiation, in which the parts become more distinct and gain more individuality. This is followed by a kind of synthetic process where the parts become again deeply imbedded in the whole. Consequently the whole itself becomes more organized and more definite.

It seems wise to follow the way of this natural biological evolution in our attempt to gain more knowledge of personality. First of all, we must obtain a picture, however vague, of the total organism. The conceptualization of this first envisagement forms the theory which may serve as a starting point. The theory at this stage is little articulated. It does not allow us to explain any specific detail phenomenon. Its utility lies elsewhere. As some parts begin to differentiate themselves out of a diffuse organismic state, so out of a very general theoretical background more definite part problems emerge. This is one of the advantages of theory: it allows for the formulation of specific problems.

Once the problem is set it has to be checked against facts. When a body of empirical data has thus been accumulated, the need for a theoretical background, in which it can be "imbedded," again arises. One needs some sort of general picture to determine the meaning of the facts; one needs a general theoretical background to which to relate the single datum. This is the second use of a theory, namely, as a basis for interpretation.

By the process of successive differentiation and synthesis, by positing problems and interpreting data, the theory which we attempt to evolve has already a moderate degree of distinctness. It still has to go, however, through many stages of differentiation, that is, formulation of more specific problems and an imbedding by more extensive empirical information before it may become sufficiently definite and practically useful. Its value, if any, lies in accomplishing a few necessary initial steps.

One may ask, however, with some justification: What guarantee does one have that the general theory so built up is correct? Error, of course, is possible with regard to general theories just as much as with regard to statements about details. All that one can require of a theory is self-consistency. The final test seems to be its "imbedding capacity," its agreement with the facts.

One must always reckon with the possibility that pseudo-problems may be posited on the basis of false theories, or that facts may be interpreted wrongly in an attempt to fit them into a preconceived scheme, thereby delaying the progress of knowledge. If, however, to avoid this danger one sets to work without any theory with the expectation that the facts by themselves will lead to a theory, one is greatly mistaken. Fact and theory are inseparable. Psychological studies show clearly that even such a relatively simple phenomenon as the perception of an external object involves a greater or less degree of interpretation. The so-called "apperceptive mass" is always there and gives a definite coloring to the observation. No scientific work is possible without theoretical assumptions, even if the investigator is not always aware

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of them. Since hypotheses cannot be eliminated from scientific work, it is certainly more reasonable to admit their presence and consider them critically than to work with implicit, unexamined hypotheses which, because not consciously recognized, are likely to conceal gross errors.

A further advantage of general theory as compared to single hypotheses is its systematic character. It is relatively easy to find a fitting explanation for a limited group of phenomena. One expects more from a general theory. It has to cover a large field, and the various ramifications of the theory have to be consistent with each other, that is, free from internal contradictions. A theory is supposed to unify the field; poorly related hypotheses are more likely to break it up into fragments.

Lastly, the economizing value of theories should also be mentioned. Especially in the last few decades literature in all sciences has increased so enormously that the student can barely keep up with developments in his special field, not to speak of those in the related sciences. I do not think that in any field knowledge becomes so vast as to pass the comprehension of a single individual. Not the quantity but the disorderliness of data defeats comprehension. If one continues to assemble facts in a more or less blind and poorly directed manner and neglects theoretical synthesis, the effort necessarily has to end in confusion. Imagine that physical mechanics were in the same state as are the humanistic sciences today. Periodicals would be filled with articles on such subjects as the path taken by a pound of iron thrown with such and such force at an angle of 17 degrees from the horizontal, or the speed of an egg-shaped body rolling along a surface inclined at 62 degrees. A mass of information of this sort would be almost impossible to retain, while the elements of mechanics can be learned in a relatively short time, and the questions treated in the hypothetical articles we have suggested can be answered without further exploration on the basis of this condensed knowledge. It is not implied that the science of personality can ever be made as simple as mechanics; it is claimed only that broad and adequate theories accomplish a substantial and time-saving simplification in any field of knowledge.

It has already been pointed out that the present theory has to be supplemented by empirical investigations. There is also another direction in which it may be extended. Like all other theory, this one, too, has certain philosophical implications. The examination of such implications, although interesting, will not be attempted in this study, except for a few remarks indicating the philosophical relevance of certain features of the theory.

THE PROBLEM OF ANALYSIS IN RELATION TO THE HOLISTIC APPROACH

It is not the purpose of this study to defend or justify once more the holistic approach to the study of the organism and to repeat unnecessarily arguments already presented by numerous authors. It seems desirable, however, to discuss briefly one objection which is often raised against it. Some state that wholes, as such, cannot be studied since scientific investigation presupposes the analysis of the whole into parts, which then makes possible the study of the interrelationships among parts.

It is, however, a misconception that the holistic type of study excludes analysis. Analysis consists in a concrete or abstractive division of an object into smaller units. One can, however, make divisions in many different ways, depending upon the principle according to which the division is made. It is true that such division may destroy the whole if the principle of the division is extraneous to the nature of the given whole, but there is a method of analysis which is perfectly adapted to the study of wholes, a method which does not destroy the object studied but, on the contrary, brings its structure into clearer relief. Let us clarify this point.

Suppose one wishes to study a given whole, be it an animal, a plant, or even an inanimate object which exhibits some of the characteristics of wholes, for example, a building. One can divide such wholes in at least four different ways. 1) One can "cut" the object into pieces *at random*. The result of such division will be a number of *fragments*. 2) One can divide the whole *according to a certain previously fixed principle* which does not take into account the intrinsic nature of that given whole but is extraneous to it. An illustration of this type of division would be the division of a tree into inch cubes. 3) One can "divide" by *abstraction,* by which is meant the resolution of objects into a number of *distinguishable properties,* for example, color, weight, consistency, etc. The result of such analysis will be a number of *features.* 4) One can divide the whole *according to its structural articulation.* Wholes, in the technical sense of the word, are never entirely undifferentiated, but are always structured and articulated into parts. This characteristic distinguishes them from homogeneous masses and from chaotic aggregations. The multiplicity of parts is just as characteristic of wholes as the unity which holds them together. The whole is never structureless but is a true *unitas multiplex,* as the philosopher would say. The division of the whole into smaller units can be made, therefore, in such a way that the line of division coincides with the structural articulation of the whole itself, and thus *the lines of division are prescribed by the structure of the whole itself.*

The parts which will be obtained by such division are real holistic units. Such is, for example, the division of a building into corridors, rooms, windows, and doors. The study of such *parts* will be at the same time a study of the characteristics of the *whole.* The door, for example, in such a study is not regarded simply as a quadrangular wooden board but in relation to its function and adequacy *as a door of the building,* that is, as an integral part

See 36

of a whole. The statement would, for instance, be made that the door is something which alternatively permits the connection and separation of a room from another or from the outside—a statement which would be impossible if the door were considered in itself and not as a part of a building. In this type of analysis one starts out with a vague, but necessary, preliminary picture of the whole. This picture becomes more definite if in the course of analysis one succeeds in determining with greater precision the role of the parts in the total scheme. Wholes are characterized by being organized according to a main principle to which all the part structures and part functions are subordinated. In a holistic type of study we do not ask what attributes the part possesses when it is considered separated from the whole. Rather do we ask what the given part contributes to the actualization of that leading principle of organization which constitutes the essence of the given whole.

A truly holistic analysis of personality into its internally determined parts has never been made. The conventional way of analysis consists in the division of the personality by abstraction into various aspects—the physiological, the psychological, and the social—and then in a search for units in the artificially defined fields. In such analysis one will find, of course, only psychological or physiological units or units of socially defined behavior patterns, but not true parts of the integrated organism. The holistic division of the personality cuts across the conventional classification, and the units obtained by holistic analysis do not coincide with physiological or psychological units. For example, what is considered as a unit physiologically may belong to more than one part of the personality and vice versa.

REQUISITES FOR A HOLISTIC THEORY OF PERSONALITY

Without minimizing the significance of the various attempts to apply the holistic approach to the problem of personality, one must admit that a science of personality or even a well-founded theory of personality on a holistic basis is yet to be developed. Some fundamental characteristics which one is justified in demanding from any holistic theory of personality may be pointed out.

1. The existing views which emphasize the holistic character of the personality are *too general.* The statement that "the personality is a whole" has a negative rather than a positive implication. It has been said with regard to the Gestalt theory that it lives by antithesis to so-called "atomism." This statement holds true to a large extent of all holistic approaches. Much of the literature on the subject is taken up by arguments to prove the inadequacy of the atomistic approach in explaining the structure and function of the organism. These discussions have served well the purpose of breaking up the conventional mechanistic-atomistic attitude toward biological science. What is needed most at the present time,

however, are contributions of a *more positive* character. It is not sufficient to point out the inadequacy of the old attitude; one must indicate how to build up a more adequate system on the new basis.

Relatively little is to be gained from the recognition of the holistic character of personality if one does not proceed to a formulation of more specific propositions with regard to organization, functioning, and the laws which govern the organism. The first requisite of a holistic theory of personality would be that of *more specific and positive formulations* of the subject-matter. It has been pointed out in the preceding section that the possibility of specific formulations is rather limited at present. This, however, does not preclude the usefulness of efforts in this direction.

2. It is often demanded of the holistic type of study that no aspect of the personality should be neglected and that one should collect all available data concerning the psychological and the physiological state of the organism, its social background, and so on. The question arises, however, whether such data can be integrated at all, and if that is possible, what method of synthesis should be applied. An example will clarify this point. Let us suppose that we are confronted with a patient who suffers from some sort of personality disorder. We make a careful physical examination and we find that the patient suffers from some metabolic disturbance. In viewing the mental aspect, we find, let us say, a delusion

of persecution as the outstanding symptom. From the social history we get the information that the patient came to the United States at the age of twelve, which probably entailed difficult problems of adjustment to a new situation. Let us suppose in addition that he had a very cruel father and an overprotective mother. The problem arises as to how to make a meaningful whole out of such heterogeneous material. Metabolic disturbances, delusions of persecution, adaptation to a cultural change, a cruel father and an overprotective mother in the family situation do not seem to belong to the same universe of discourse. It is difficult to envisage how such apparently heterogeneous data can be synthesized. Furthermore, the significance of these data for the condition in question being obscure, one does not know that any of them is other than adventitious to the case *qua* case.

One may say either that the data referring to artificially separated aspects of personality cannot be utilized at all in holistic studies so that one must provide facts of a new type for such purpose, or that one is forced to devise a method of synthesis which would make possible the unification of apparently heterogeneous material under a common heading. The problem of synthesis can be illustrated in an example used by K. Bühler.[2] When a geographer is confronted with the problem of preparing a map of a new terrain, he begins his work by taking from various vantage points a number of photographs of the place which is to be mapped out. But his goal is far from being achieved at this stage. The pictures which he has obtained, although referring to various aspects of the same object, represent quite heterogeneous material; they may even be entirely unlike each other. They cannot be simply fitted together. A collection of such data tells very little to the layman regarding the morphology of the given terrain, and yet it constitutes a body of data for the expert wishing to draw a precise map of the region, because he has developed a *definite method of synthesis*. He is able to transfer into a common scheme the data contained in the various pictures. The transference of the data does not consist simply in adding them together; it involves a *reinterpretation according to definite rules*. A datum contained in one picture will be inscribed into the common scheme in a way entirely different from the way the same datum contained in a picture obtained from another vantage point is utilized. The problem of synthesis, for the student of personality, is even more complicated. The data which the geographer has to unify belong at least to the same order of phenomena, whereas the data with which the student of personality deals belong apparently to very different orders.

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[2] K. Bühler, Die Krise der Psychologie, Jena, Fischer, 1927.

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The second requisite, with regard to a holistic theory of personality, is therefore that it should either (a) give up utilizing facts referring to single aspects and *provide new facts* which are adequate for such study; or (b) *devise a method of synthesis* of segmental data. I believe that a holistic science of personality requires new types of facts, but I will try to show later that the synthesis of segmental data in a holistic scheme is to some extent also possible and useful.

3. A holistic theory of personality should not borrow its concepts from either physiology or psychology but should *develop its own set of concepts.* The holistic theory of personality deals with facts referring to the integrated organism before any abstractive separation of the mental and the organic aspects has occurred. The description of such facts in physiological or psychological terms causes only confusion. The concepts and terms in which we describe facts referring to the total organism must be—to use an expression of William Stern[3]—psychophysically neutral. The precise formulation of this new set of concepts is one of the most important tasks of a holistic theory of personality.

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[3] W. Stern, Studien zur Personwissenschaft, I: Personalistik als Wissenschaft, Leipzig, Barth, 1930.

II. THE TREND TOWARD INCREASED AUTONOMY

THE ORGANISM AS A DYNAMIC WHOLE

SOME phenomena of nature exist in the form of static structures, others in the form of reversible or irreversible processes. Examples of the first are geometrical forms, of the second, waterfall, wind, combustion, etc. The existential form of the organism is dynamic. This has been formulated by Jennings in his much quoted statement that "The organism is a process." In the last analysis, "organism" and "life" are identical concepts. The first term places the emphasis on the structural, the second on the dynamic aspect. The two aspects are inseparable from each other. The essential characteristics of the organism are, however, more clearly revealed in its function than in its morphological features. The morphological structure is subordinated to the functional organization which has a logical primacy over it. If one calls a dead animal an "organism" one implies previous function, since without this implication a corpse is obviously only a morphological pattern. Each organ is—as the word implies—a tool of the organism. The heart of the dead animal can be called a tool only with regard to its previous function. When one speaks of any organ it is always implied that it has a function in the total economy of the organism—even though our knowledge of this function may on occasion be quite inadequate—otherwise it would not deserve the name of an organ.

One has to study life as a dynamic whole. In every whole there is a leading principle according to which it is organized. Thus the necessity arises of defining the leading principle of organization of the biological total process. The problem can be stated as follows: *What is the general pattern which the organismic total process follows?* An adequate definition of the general pattern of the biological total process is not only of great theoretical interest but has far-reaching consequences for the actual study of the organism. Every organismic part process is a manifestation of the dynamism of the total organism. The part processes gain their meaning from the general pattern of functional organization and can be correctly understood only in the context of this organization.

THE HYPOTHESIS OF IMMANENCE

In spite of the differences in the way in which various students define life, there is an element which is common to almost all the existing definitions—a common theoretical nucleus which could be conveniently called the "immanence theory of life." This can be roughly stated in the following way:

One might view the organism as consisting of a number of parts or organs which have specific functions. These functions lead beyond the organ itself. Thus, for instance, the main function of the lungs is to provide oxygen and to eliminate certain gaseous waste products. The lungs, however, do not provide oxygen only for their own tissues, but also for the tissues of the other organs. The same thing holds with regard to the other organs of the body. The heart irrigates with blood not only its own tissues, but all the tissues of the body. Thus we find between the different parts of a living organism relations of the type shown in Figure 1.

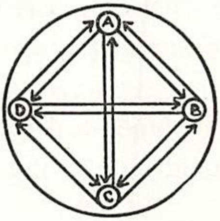

FIGURE 1

Organ A works for organs A, B, C, and D. The entire meaning of the function of organ A is to maintain itself and organs B, C, and D in a condition in which they can fulfill efficiently their specific functions. The function of organ B in return is to maintain in good functional condition itself and the organs A, C, and D—and so forth.

This would be a process taking place within a closed circle. It would not seem to lead anywhere and it would be comparable to a wheel turning on its own axis without progressing. Within the circle the function of each organ can be defined by what it accomplishes for the rest of the organism. However, a functional definition of the total life process seems impossible from this point of view and life as a whole appears as functionally meaningless.

The "immanence hypothesis" is not a point of view which has actually been maintained by anyone in the crude form outlined here, which is almost a caricature. It is, however, the theoretical nucleus implicitly contained in most existing definitions and not a straw man which has been set up arbitrarily for the sake of argument. R. Ehrenberg refers to this implicit point of view when he writes: "There is hardly a biologist who would doubt that this [assimilation-dissimilation] is a—though not always perfect—circular process, that assimilation reestablishes a previous state which has been altered by dissimilation. The conception of life as an oscillation about a position of equilibrium, as repeated disturbances and reestablishments of an equilibrium . . . is certainly the most widely held conception."[1] In every theory which postulates the maintenance of equilibrium or self-preservation and survival, as the general trend of the life process, the hypothesis of immanence is always implicit. The assumption in all such theories is that the life process forms a closed circle which does not lead beyond the sum total of the part function. Such a point of view may, therefore, justly be called an immanence hypothesis or a "closed-circle hypothesis" of life.

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[1] R. Ehrenberg, Theoretische Biologie vom Standpunkte der Irreversibilität des elementaren Lebensvorganges, Berlin, Springer, 1923, p. 10.

This viewpoint was once commented upon satirically by a humorist who remarked: "Scientists have found out that the ears are for hearing, the eyes for seeing, the lungs for breathing, the hands for grasping, the feet for walking; they should now take just a little step further and find out what the whole man is for." The problem stated in this way is a philosophical one; but if we formulate the problem in a somewhat different way and ask: What is the general trend in the total dynamism of the organism? What is the direction in which the total life process evolves? What is the organism aiming at, in its total function?—then we have a legitimate scientific problem, which a theory of the total organism should answer. The solution of this question in terms of the hypothesis of immanence would be a *biological nihilism.* The entire functional meaning of the single part process is to "keep going" the rest of the "machinery" which has then no function, no direction, no aim. According to such a view the life process would have the pattern of a logical vicious circle: the part processes have the function to maintain life; and life is an aggregation of these part processes.

THE TREND TOWARD AUTONOMY

A PRELIMINARY DEFINITION OF THE GENERAL DYNAMIC TREND OF THE ORGANISM

In the theory represented schematically in Figure 1 some highly significant facts have been neglected. A little reflection will show that life, in all its forms—be it in the plant or animal world—is not a completely closed circle of processes. The circle is open at two points (Figure 2). These are: *assimilation* (intake), on the one side, and *production,* on the other. These terms need some clarification.

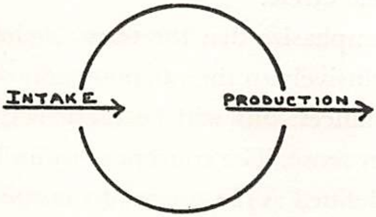

FIGURE 2

The most primitive form of assimilation, common to every organism, is a material one: that is, assimilation of food or nutrition. It is a stream of material (food substances, oxygen, carbon dioxide) flowing from the environment into the organism, a stream which is maintained and directed by the activity of the organism itself. Nutrition means more than merely an infiltration of certain substances from the surroundings into the organism. The substances on the way undergo a progressive transformation under the moulding influences of the organism until complete assimilation has taken place. This is a profound metamorphosis, a transformation of environmental matter into "living matter." A consideration of the phenomenon of assimilation makes it obvious that life cannot be considered as a process entirely enclosed within the limits of the organism. The organism reaches out into the surrounding world, draws material from it, and transforms this material into functioning parts of the organismic system. The life process has an outward direction and thus transcends the pattern of a closed circle.

I wish to emphasize that the term "assimilation" does not refer exclusively to the phenomenon of assimilation of food substances, but will be used in this study in a much broader sense. The concept of assimilation, in general, can be defined as *the process by means of which any factor which is originally external to the organism becomes a functional part of it.* The assimilation of food substances was selected as an example because, for a definition of life processes in general, only those factors can be taken into account which are common to all living beings. Assimilation of food is only one example of a more general phenomenon. Some other forms will be mentioned later.

The second break in the scheme (Figure 2) is represented by production. Each living being creates something which transcends its own limits. In order to exemplify the creativeness of the organism we may point to the fact of reproduction, that is, the production of a new organism, as a general example of processes common to all living beings.[2] With regard to reproduction the implications of the closed-circle theory of life do not hold any longer. The function of reproduction cannot be defined by "what it accomplishes for the rest of the organism." In fact, it does not serve any intra-individual purpose but it points and leads beyond the individual organism itself. Further examples of production are muscular and mental activities with their corresponding products.

The biological meaning of assimilation and production can be synthesized into a single principle. Assimilation is a continuous transformation of environmental things into functioning parts of the living organism; it is not enclosed within the limits of the organism but is a process which points beyond these limits. It draws incessantly new material from the outside world, transforming alien objects into functional parts of its own. Thus the organism *expands* at the expense of its surroundings. The expansion may be a material one as in the case of bodily growth, or a psychological one as in the case of the assimilation of experiences which result in mental growth, or a functional one as when one acquires skill, with a resulting increase of efficiency in dealing with the environment, and so forth.

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[2] The phenomenon of reproduction, besides being an example of the creativeness of the organism, has a great significance for the theory of the total organism from another point of view as well. It is an example of the integration of the individual into superindividual units. This aspect of the problem will be taken up in Chapter VI.

The organism also expands through its creativeness. Instruments invented by man extend the capabilities of the organism beyond their original limits. There are a great number of devices which broaden and refine our sensory capacities, as, for instance, the microscope, the telescope, and the telephone. The invention of writing extended our capacity to "record" whatever we wish to a degree which memory alone could never achieve. Various machines and labor-saving devices add tremendously to our muscular capacities. Our natural weapons are vastly increased by the addition of artificial weapons. The various implements which we use are almost like organs added to those which we originally possess. Other examples: there are organic mechanisms which protect us from the unfavorable influences of climatic conditions. However, we support these organic mechanisms powerfully by artificial means (habitations, clothes, and so forth). These examples could be multiplied almost indefinitely. The products of the activities of the organism have a middle position between environment and organism. Such products differ from other objects of the environment in that they are integrated with the total activity of the organism, by carrying out important part functions in the biological total process. In other words, the organism with the help of its products extends itself into the external world by converting a large range of external objects into tools which—to a certain extent—become integral parts of the organismic total process.

The process of reproduction is somewhat different. Here the progeny usually achieves sooner or later an independent existence and no longer plays any part in the life of the mother organism. But since, in reproducing itself, the organism increases the number of individuals of its own kind, this phenomenon may also be assigned to the category of expansion.

As a first approximation we may define life as *a process of self-expansion.* The dynamism of the total organism does not follow the pattern of a closed circle, but is a process which evolves in a *definite direction.* The total process can be divided into two phases: a) the centripetal stream of assimilation which draws material from the environment into the organism, and continues thence as b) a centrifugal outflow of production. All partial functions of the organism are subordinated to this general trend, and may be divided into two groups: functions concerned with assimilation and functions concerned with production. The respiratory and digestive organs stand in the service of assimilation. The environmental raw material is remoulded by mechanical and chemical methods which make it more and more similar to the material of the organism itself. It is then carried by lymphatics and blood vessels to the cells where the final assimilation, the metamorphosis of the environmental

Self-expanding

See also
Brightman
Phil. of Rel.
—
Dialectic of
desire

objects into the functioning parts of the organism, is completed. From here on the productive or creative phase of the organismic total process starts, maintained by the function of nervous, muscular, and generative "effectors." Although part of this activity turns back and supports a further assimilation of raw material, another part results in products as a "net profit." Nervous and chemical systems of coordination (for example, the endocrines) ensure the harmonious working of the organism.

Elimination

There is, in addition, a third group of accessory functions which do not contribute directly to the main stream of the organismic total process, but safeguard it against disturbing influences. Instances of such functions are the elimination of unassimilable material and of harmful by-products of the life process in the form of urine and feces, sweat, etc.

From the point of view which has been developed here one can easily discover the fallacies contained in the closed-circle theory of life. For instance, A. von Tschermak[3] defines life as a two-directional process. On one side there is a storing-up of matter and energy, on the other side a dispersal of matter and energy; on the one side, anabolism, and on the other, catabolism.

K

Error

Quest.

The error in such a definition is that it seems to identify catabolism with dispersion of matter and energy, and that it considers such dispersion as the twin of the process of anabolism. The biological function of catabolism, however, is not energy dispersion, but energy mobilization. When anabolism is completed, the next step in the biological total process is not dispersion but productive utilization of energy, which is mobilized by catabolism. The dispersion of matter and energy, their escape from the organismic system, is only the unavoidable by-product of living, an epiphenomenon. The energy which is stored up by the organism is not wasted but, at least in part, used for productive activity.

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[3] A. von Tschermak, Allgemeine Physiologie, Berlin, Springer, 1924, p. 4.

The physiologist, of course, is well aware of the process of assimilation through which environmental things are taken in and transformed into functioning parts of the biological organization. He is equally aware of the productivity of living beings. The physiologist, however, *qua* physiologist, focuses his attention upon intra-organismic functional relationships. Such a limitation of the field has its value from the point of view of division of labor, but the definition of life conceived from a purely intra-organismic point of view affords too narrow a basis for a science of personality. If one neglects the inwardly and outwardly directed stream of assimilation and production, or if one does not account for it sufficiently in one's theory, the essential self-transcending character of the functional pattern of living, naturally, does not reveal itself.

Quest. 5

According to our point of view the life process does not take place *within* the organism, but *between the or-*

ganism and the environment. If one defines life as a process of self-expansion, the factor "environment" is already implicit in the definition. The organism cannot expand within itself; it can expand only in a medium which is originally external to it, the environment. The life process embraces both organism and environment. Organism and environment are the two indispensable poles of a single process—life. The thesis that life is a process which takes place between individual and environment is discussed in greater detail in Chapter IV.

DEFINITION OF THE BIOLOGICAL TOTAL PROCESS AS A TREND TOWARD INCREASED AUTONOMY

A consideration of the phenomena of assimilation and production gave occasion to point out the self-transcending, or progressive, character of life. It has been suggested that the pattern of the biological total process may be defined provisionally as a trend toward self-expansion. This definition is, however, presented only as a first approximation. In order to reach a more precise formulation we will now consider another aspect of the biological total process.

One of the essential features of living organisms, whereby they differ from any other object in nature, is what we might call their *autonomy*. By this is meant that the organism does not represent merely an inactive point, in which various causal chains intersect—as

Autonomy

mechanistic philosophy assumes—but is, to a large extent, a *self-governing* entity. The biological process is not a resultant of external forces, but is, in part, governed by specifically biological endogenous factors. The organism itself is, to a large extent, the cause of its functions, that is, it is endowed with spontaneity. We could also say that the organism possesses a certain degree of "freedom," if we use the term in the sense of Spinoza and call free that which acts according to its own inherent nature, according to its intrinsic law, and not under the compulsion of exogenous forces.

The organism lives in a world in which things happen according to laws which are heteronomous from the point of view of the organism.[4] The organism is subjected to the laws of the physical world just as is any other object of nature, with the exception that it can oppose self-determination to external determination. When an animal has been dropped from a height it follows the law of gravitation like any other body. In such instance the organism takes part in a mechanical happening *simply as a mass and not as an organism.* In many instances, however, such physical happenings will not be determined entirely by the law of gravitation and by the mass of the organism. The result will be modified by influences which originate from within the organism. A

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[4] The term "autonomous" is used in this discussion to mean "governed from inside"; and "heteronomous" to mean "governed from outside."

Quest B

cat also falls according to the law of gravity, but it will land on its feet whatever the position of its body at the beginning of the fall. By means of an endogenous factor, the so-called righting reflexes, the cat modifies the mechanical process and manages to land on its feet.

If we take as an example a chemical influence on the organism we will find conditions analogous to that described in the previous example. When one puts a drop of sulphuric acid on the skin, the skin will be burned. This is a process which is not different in its character from chemical processes which take place outside of the body. The process going on in the affected area, however, will soon be modified by influences originating within the organism (inflammation, healing of the wound) which tend to repair the damage and reestablish a state which is favorable for the organism.

It would probably be generally agreed that without autonomy, without self-government, the life process could not be understood. Selection, choice, self-regulation, adaptation, regeneration are phenomena which logically imply an autonomy of the organism. Selection, that is, the search for certain environmental conditions and the avoidance of other conditions, is only possible in a being capable of self-directed activity. The various functions usually comprised under the term "self-regulation" are another group of phenomena which clearly demonstrate the autonomy of the organism. Good instances of self-regulation are those functions which make it possible to maintain "homeostasis" (Cannon[5]), as heat regulation in the warm-blooded animals which enables them to maintain a fairly constant temperature of the body in spite of considerable changes in the temperature of the environment.

The various phenomena of adaptation in the field of sensory functions are further examples of the self-directed activity of the organism. Adaptation in the sensory field is the ability of the organism to modify the function of its sense organs according to the demands of the situation. The eyes, for instance, would be a very poor optic apparatus indeed without the capacity of accommodation for distance and of adaptation to light and darkness. Phenomena of adaptation are present in varying degrees in all sense organs.

There does not exist a single life process which could be understood without the autonomy of the organism. We may take, for instance, the process of assimilation. How could an organism, without self-directed action, manage to build up from food substances, the chemical constitution of which varies between broad limits, a protoplasm which is specific for the given species and even for the given individual?

Even such relatively simple phenomena as tropisms are unexplainable without this capacity. A plant responds to the force of gravitation by sending its roots downward, but in response to the same force of gravitation it sends its stem upward and the branches sideways (positive, negative, and diagonal geotropism). Thus we deal here with a true stimulus-response relationship which is different from a merely mechanical process.

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[5] W. B. Cannon, The Wisdom of the Body, New York, Norton, 1932.

The stimulus-response relationship in general shows very decidedly the autonomous nature of the organism. The organism does not react to external influences only as a physicochemical body, but responds, in its own specific way, as an organism. The external influence in such a case is not the mechanical cause of the reaction of the organism, but is the *stimulus* which *prompts* the response. The response is mainly determined by the intrinsic tendencies of the organism, or—applying the terminology used above—is essentially an autonomous function. In the stimulus-response relationship even the stimulus is not a simple physicochemical process. The external condition which prompts the response acts not by its properties as such but by its properties relative to the organism. The stimulus quality of an object is a relational property, that is, one which the object derives from its relation to the organism. For example, a piece of bread "in itself" is merely an object with certain chemical and physical properties. Its stimulus quality of being "food" is not an internal quality, but a quality which exists only with regard to the organism.[6] The distinction between the mechanical cause-effect relation, on the one hand, and the biological stimulus-response process, on the other, may seem hair-splitting, but actually the difference is a very important one. We will return to this problem in Chapter VIII.

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[6] Woodger makes a useful distinction between the "relational" and "intrinsic qualities" of the parts of the whole (H. H. Woodger, The concept of organism and the relation between embryology and genetics, Quarterly Review of Biology, 5:14, 1930). I use the term relational

Some of the phenomena which we used as examples to illustrate the autonomy of the organism can be reproduced superficially by proper mechanical devices. This has frequently been used as an argument in support of a mechanistic conception of life. The comparison between organism and mechanical devices is not very useful. Mechanical devices have relation not only to inorganic constellations but also to the organism. They are created by man, who lends to them certain organismic features. The problem has been well discussed in a monograph by Alverdes, and he concludes that "the essential difference is that the mechanical device is characterized by *passivity,* the organism by *activity.*"[7] Alverdes' concept of activity implies autonomy.

The autonomy of the organism is not an absolute one. Self-determination is restricted by outside influences which, with respect to the organism, are heteronomous. The organism lives in a world in which processes go on

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property here in a more general sense, meaning by it a quality which an object has only when it stands in a certain relation to another object. In the sentence, "A is larger than B," the word "larger" indicates a relational quality. An object in itself cannot be "larger." It can be larger only in relation to another object.

[7] F. Alverdes, Die Totalität des Lebendigen, Leipzig, Barth (Bios, vol. 3), 1935, p. 11.

independently of it. The organism asserts itself against the heteronomous surroundings. As has been pointed out, life by implication is not an intra-organismic process, but a process which takes place between the organism and its environment. Thus every single organismic part process, and also the life process as a whole, is always a *resultant of two components, autonomy and heteronomy.* A given organismic process can be expressed by the ratio *a* (autonomy) : *h* (heteronomy). If in this ratio *a* is reduced to zero, we no longer have an organismic process, but a physical one. If in this ratio the value of *h* is reduced to zero, we obtain the concept of an absolutely "free" hypothetical entity which is entirely exempt from the influences of the physical world. This would correspond to the old concept of "soul." In the realm of organismic happenings we find neither entirely heteronomous nor entirely autonomous processes. There is life only where in the ratio *a*:*h* the values of both *a* and *h* are positive and greater than zero.

By using the terms "autonomy" and "heteronomy" I do not wish to express any theory with regard to the nature of the laws which govern physical and organismic happenings. I do not take here any attitude toward the problem whether organismic and physical laws are different or identical, whether the organismic laws can be derived from physical ones (materialism, mechanism), or the physical laws from organismic laws (Haldane, A. Meyer). Autonomy and heteronomy refer here only to the source out of which a process is governed. In this study, by autonomy is meant "self-government" and by heteronomy "government from the outside." Thus, for example, when two animals A and B are engaged in a fight, what animal A does to animal B is heteronomous for B, in spite of the fact that it originates from an organism.

As mentioned above, in an organismic process expressed by the ratio $a:h$, the value of a and the value of h must be positive and greater than zero. The relative values of a and h, however, vary within broad limits. The autonomous determination of the organism may play a larger role in one of its manifestations than in another. The relative values of a and h vary also from situation to situation, from individual to individual, and from one species to another. Thus if we compare, for instance, living beings of different species, we find *marked variations in the importance of autonomous and heteronomous determinations in their lives.* A few examples will be sufficient to illustrate this point. Supposing that the ground where a plant lives becomes poor in those substances which it needs as food. The plant has certain limited possibilities of struggling against this unfavorable environmental condition, for example, by changing the direction of the growth of its roots, but adaptive possibilities are limited. Under similar conditions an animal is not so dependent upon heteronomous determination. If an environment is poor in food, animals can seek food by moving to other regions. This means that in certain species the process of acquiring food is determined to a larger extent than in others by the self-government of the organism. Certain animals make themselves even more independent of the influences of the environment, as far as nutrition is concerned, by storing up their food as a provision for times of need.

We may take still another form of biological function, such as reproduction. In many kinds of plants the process of fecundation is to a large extent heteronomous. It is largely dependent on external conditions such as the action of insects and the wind. The autonomy of the organism is ensured in those cases only by structural arrangements which are adapted for such external influences. The seed is spread also by the influence of the wind and its fate depends again chiefly upon the conditions and the influences of the external world. If the seed drops upon fertile ground it can survive and grow; if it drops on a rock it perishes. In animals, on the other hand, the fecundation takes place to a large extent through autonomous determination, that is, by processes determined by the organism itself. The fertilized egg is not left to chance of external conditions; it is deposited in a protected, favorable place. In the case of other animals, a deposit of food is made near the egg which serves as nourishment of the young in the first period of their life. Other animals remain with the egg until the young are born. Certain animals care for the young after birth, often for a considerable length of time, continuing to exert a modifying influence on them. This again signifies a great progress in liberating oneself from external determination, a high degree of emancipation from environmental conditions.

I wish to emphasize that these differences between various biological processes are not mentioned in order to show that one form is more efficient than the other. It is, for example, quite possible that, in general, the reproductive process is more effective for plants than for animals. This is not the point, however. The important fact is that in the reproductive and other processes of plants external determination plays a greater, and internal determination a smaller, role than in the corresponding processes of animal life.

If one now considers the organismic total process with regard to the $a:h$ ratio, one discovers *a definite trend in the organismic total process toward an increase of the relative value of* a *in this ratio, that is, a trend toward an increase of autonomy*. This trend does not have a fixed objective but only a general direction. At each stage of the biological process the tendency is toward a situation which is characterized by a greater degree of autonomy than the preceding situation. The organism does not always succeed in progressing toward greater autonomy, and under heteronomous environmental influences may even be thrown back to a stage of diminished autonomy.

This, however, occurs through external compulsion and not by the activity of the organism.

In order to justify the preceding statement we do not need to survey all the functions of the organism. In an earlier section we have classified the various functions of the organism in two general groups: those concerned with assimilation and those concerned with production, and it will be sufficient for our purpose to consider the functions under these two groups collectively.

Assimilation was defined as a process by means of which a factor, which is originally external to the organism, becomes a functioning part of it. With regard to the organism the terms "external" and "internal" have a specific meaning. They do not refer to spatial relations, but rather are to be understood metaphorically. The term "internal" is used here to mean "belonging to the organism" and "external" to mean "not belonging to the organism." "Belonging" does not refer to coherence in space, but expresses primarily the general relation of the part to the whole. In a case of dynamic wholes, such as organisms, "belonging" or "being a part of" means that a certain factor is carrying out a partial function of the total system. If we consider this relationship with regard to the source which governs a function, we can conclude that a given function is only a partial function of the organism when it is governed by the organism itself, that is, when it becomes a manifestation of organismic autonomy.

In the process of assimilation environmental factors undergo stages of successive modification in such a way that they come more and more under the control of the organism until they are integrated with the organism and become a functioning part thereof. At the beginning of the process of assimilation the organism faces a given factor which is, as yet, entirely free from the influence of the organism (heteronomous). When the organism begins to exert its influence on this environmental factor, the resulting event can be represented dynamically by the ratio $a:h$ in which the relative value of a is very small. As the process continues, the influence of the organism on the occurrence, which results from the interaction of the organism and the given environmental factor, increases; that is, in the $a:h$ ratio a gradually becomes greater. Thus the process of assimilation can be regarded as a specific manifestation of the general dynamic trend of the organism toward increased autonomy.

The second major class of organismic functions, those concerned with production, also reflects the trend of the organism toward increase of autonomy. Production in general can be defined as the activity of the organism by means of which it creates planful changes in the environment. We have in mind primarily such things as the building of habitations, roads, bridges, machines, the fabrication and use of various tools and instruments, the domestication of plants and animals, and so forth.[8] The result of such activities is a transformation of the primitive surroundings into a situation in which events are more or less under the control of the organism. While in the world in general, events take place without regard to the needs of the organism, in the "cultivated" environment these events are modified by the influence of the organismic activity in such a way that they converge with the biological total process. In an uninfluenced environment, for example, the temperature changes according to the stark laws of physics, without regard to the welfare of the organism; but in human habitations, by a judicious use of physical principles, we modify the course of events by means of various devices in order to obtain a more or less constant, favorable temperature in our immediate environment. We influence planfully the flora and fauna of our surroundings by inhibiting the growth of certain species and promoting the growth or modifying the characteristics of others. The significance of science for human life is not materially different from what it is for other fields of production. The aim is to master, theoretically or practically, blind heteronomous happenings, to place them at the service of life and to eliminate disturbing influences.

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[8] Certain activities which cannot be adequately characterized by

No matter what example of production we take, we always discover the modifying, controlling influences of

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stating that they "induce planned changes in the environment," like artistic creation or religious practice, are not considered here. They will be discussed in Chapter VI.

the organism on the events of its environment. The range of this influence may be very slight, as in the case of a budding yeast, or impressively great, as in human life; the general tendency is the same. This fact may be expressed in the terminology introduced above. In a world uninfluenced by the organism, events are—from the point of view of the organism—entirely heteronomously determined. This can be represented by the symbol *h*. When the organism begins to act on its environment, the resulting event can be expressed by the $a:h$ ratio in which the value of a is rather small. The tendency of the organism in its productive activity leads to an increased control of the environment, that is, to the increase of the value of a in the $a:h$ ratio.

Thus assimilation and production appear as different manifestations of the same general tendency of the organism. In so far as the functions of the organism are susceptible to division into functions concerned with assimilation and functions concerned with production, we may say that the general dynamic trend of the organism is toward an increase of autonomy.[9] This trend can be expressed in the following form:

$$\left(\frac{\mathrm{a}}{\mathrm{h}}\right)_1 \mathrel{<\!\!\!\!\rightarrow} \left(\frac{\mathrm{a}}{\mathrm{h}}\right)_2$$

In apparent contradiction to this tendency we observe a large group of regressive phenomena. Successive stages in the organismic total process are not always characterized by greater autonomy. Frequently the opposite is true of individual life, as well as of phylogenetic history. The phenomena of regression seem to fall readily into two groups: passive set-back and strategic retreat. A passive set-back is analogous to the situation of a man swimming against the stream. His activity is directed toward progression in a given direction, and he actually does progress with every stroke with respect to the water in his neighborhood. At the same time, however, he is carried backward by the force of the stream with respect to the banks. The resulting movement depends on these

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[9] It is very suggestive to assume that the tendency toward increased

autonomy is not only the general dynamic trend of the individual organism but also the *primum movens* of the phylogenetic process. The phylogenetic line is a succession of individual lives. Hence it is plausible and methodologically convenient to assume that individual life processes and phylogenesis follow the same dynamic trend. Such factors as adaptation, for instance, can be regarded only as secondary for phylogenesis. Adaptation obviously does not mean that the organism changes under environmental influences, but that it changes in a way to retain its main dynamic trend in spite of interfering circumstances. Thus adaptation already presupposes a primary trend in the organismic total processes. The same consideration can be applied to many other factors which were claimed to be driving forces of phylogenesis.

The view developed here also permits us to distinguish between higher and lower levels of development. The higher level would be characterized by a high positive value of $\frac{a}{h}$ and the lower one by a smaller positive value of $\frac{a}{h}$. Of course, one cannot expect a perfect correlation between the value of the $\frac{a}{h}$ ratio and the place of a given organism or species in the phylogenetic line, since the former expresses *degrees of development* while the latter refers to an order of chronological successions, and the two, of course, do not necessarily always coincide. These remarks are made by way of a suggestion. The problem of phylogenesis is not our primary concern in this study.

two components. If the force of the stream is greater than his, he will be carried backward, but even in such a case we still can say that the man's tendency is to move upstream. We can say that the tendency of the organism is toward increased autonomy, even if actually it is carried backward by the stream of heteronomous influences with a resulting decrease of autonomy. The final result is always a victory of physical forces over the organism: aging and death.

Quest. 9

Regression may also be a strategic move. In warfare one of the combatants may be pushed backward under the heteronomous influence of the enemy or actively retreat for strategic purposes. In neither case does the retreating group wish to be defeated. Sometimes an offensive, sometimes active retreat is the more expedient procedure. The goal itself is always *"progressive."* In human life regression may occur, as when a situation becomes untenable at a certain level of complexity and one partially retreats to a more primitive situation, usually to one which has been tried out at an earlier date.

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Hypotheses concerning a kind of large-scale regression, as in the hypothesis of the death instinct, are not very convincing. Even among orthodox psychoanalysts the theory is far from being generally accepted. The facts which are attributed to the death instinct can probably be explained more plausibly on another basis.[10]

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[10] There is, however, an important group of phenomena in human

The purpose of the preceding discussion was to define the general dynamic trend of the organismic total process. The results of these considerations can be summarized as follows: Life is an autonomous dynamic event which takes place between the organism and the environment. Life processes do not merely tend to preserve life but transcend the momentary status quo of the organism, expanding itself continuously and imposing its autonomous determination upon an ever increasing realm of events.

Quest. 10

The process of expansion is limited not only by outside influences, but, obviously, also by the nature of the given organism. The capacity for expansion shows a broad phylogenetic and individual variation. The tendency toward increased autonomy is a tendency to achieve, dominate, and master the environment. It is closely related to the concept of aggression which, in its modern usage, does not necessarily imply hostility. ?

Adler – The will to power.

In the preceding discussion of the trend toward increasing autonomy the examples were so selected as to illustrate the broad biological basis of this fundamental human tendency. The attempt to trace its manifold manifestations in the life of the person would require a more detailed treatment than is possible in a theoretical outline as general as the present one. Hence we will have

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life which are not based on the assertion of one's individuality, but definitely imply the restriction of one's individualistic existence. Such phenomena seem to be the manifestations of a "tendency toward homonomy" to be discussed in a later section (Chapter VI).

to limit ourselves to suggesting later (Chapter VII) only some of the specific channels through which the trend toward increased autonomy finds a concrete outlet in personal life. The operation of some such fundamental tendency in the human personality could not escape the attention of any student of man, and though it has been formulated in various ways and varying degrees of significance have been ascribed to it, it has found its way into practically all existing systems dealing with personality organization. In psychoanalysis the aggressive tendencies are second only to the libidinal urges. In Adlerian individual psychology the craving for power and for superiority is the axis of the entire personality organization. Aggressiveness, combativeness, the urge for mastery, domination, or some equivalent urge or drive or trait is assumed probably by all students of personality. All these various concepts imply that the human being has a characteristic tendency toward self-determination, that is, a tendency to resist external influences and to subordinate the heteronomous forces of the physical and social environment to its own sphere of influence. The definition of the exact relations of aggressiveness, craving for power, or similar concepts to the trend toward increased autonomy seems neither necessary nor fruitful in the present context. It seems advisable to use the concept of a trend toward increased autonomy as formulated here in preference to other concepts because it expresses the broad human tendency in question, while other concepts like craving for power refer merely to some aspect thereof.

SOME IMPLICATIONS OF THE ABOVE THEORY

It will be useful to point out certain characteristics and implications of the above considerations in order to bring into clearer relief certain basic features of our point of view. I wish to place special emphasis on the following characteristics of the theory just presented.

1. The organism is considered not as a static structure but as a *dynamic organization*. We are not primarily concerned with those static views of the organism which one may gain by means of certain neglective abstractions. It is not a question of a personal preference whether one studies a given phenomenon from a static or from a dynamic point of view. The nature of the phenomenon in question determines the adequacy of a given approach to a selected set of phenomena. Geometrical forms exist as static structures, but a waterfall, for instance, exists as a process. A structural analysis is an adequate approach to the study of static phenomena, but processes can be studied properly only from the dynamic aspect. Since the existential form of the organism is a dynamic one, it has to be studied from the dynamic point of view, that is, as a process.

2. Students of life conventionally place the emphasis in their considerations upon intra-organismic relation-

ships. Here, on the other hand, we take the view—which will be further developed in Chapter IV—that the life process does not take place *within* the organism, but between the organism and the environment. Organism and environment are considered as the two indispensable poles of the life process. The life process can be expressed dynamically by the ratio between autonomy (organism) and heteronomy (environment). Life is possible only when the value of both factors in the ratio is positive and greater than zero.

3. Life is here conceived *not* as an *immanent* but as a *self-transcending* process. It does not merely tend to preserve a given state, but also points beyond its status quo. One might argue that the extension of autonomy is only secondary, while the primary trend would be self-preservation. One might say that the drive "to be" must logically precede any other trends of the organism. This is, however, an erroneous point of view. The expression "to be" in the previous statement cannot refer to mere existence. Rather does it refer to a very specific form of existence. It obviously does not mean "to be in whatever form," as, for example, "to be dead," but it means "to be alive," "to live"; and life, if our definition is correct, is a process tending toward an increase in the autonomy of the organism.

to be alive

4. The concept of autonomy is not new. It is an important issue in various biological theories, in that of Driesch, for example. The purpose of the present dis-

cussion is, however, not only to point out the autonomous nature of the organism, but to argue that the life process tends toward an *increase* of autonomy. It is furthermore assumed that such trend or tendency represents one of the basic patterns of the biological total process. The universality of this tendency of the organism does not contradict the phenomena of regression, when the organism is set back by heteronomous influences to a state of lessened autonomy or when it retreats strategically to such a state.

5. I wish to emphasize that the trend or tendency toward increased autonomy is *not an entity,* not something which *makes* the life process take a specific direction, but should be understood as a descriptive term referring to the *pattern of the life process.* This general trend is not a hypothetical entity hidden behind the scene and from there directing events, but is a general expression of the *way according to which the life process takes place.* Such a trend is not postulated as an explanatory principle but is a *descriptive generalization.*

Our formulation of this general trend is comparable to the manner in which laws are formulated in physics. The process of free fall, for instance, takes place according to a definite pattern. When the physicist states the law of free fall, he expresses in his formula the pattern of this process. His formula does not imply the assumption of any entity which "makes" the object fall. Our formulation of the basic trend of the organismic total process is exactly of the same nature: in both cases we deal with statements referring to the *pattern of a process.*

Concepts in physics have undergone in the past an evolution similar to the one biological concepts are undergoing now. For instance, causation means today something essentially different from what it meant in the past. The earlier conception implied a "force," an "entity" which made things happen, while today it means rather a constant or—to avoid objection from certain quarters in modern theoretical physics—an approximately constant pattern of successive events. The crude concepts of "entities" are due to primitive ways of thinking which tend to conceive of everything as object. We wish, however, to avoid here the not uncommon mistake of hypostatization.

6. The point of view presented in this paper is not strictly *teleological* but merely *directional.* The difference between the two concepts can be shown by considering one primary meaning of the term direction, namely, direction in space. The arrow A represents a direction in Figure 3. This direction could be defined with *regard to a goal "a"* toward which it is oriented. The teleological conception of the organismic process would mean, accordingly, that the organismic activity tends toward a certain goal or "telos," for instance, happiness or a state of equilibrium or some other objective. Reaching that goal would mean the end of the process and any future activity could aim only at the maintenance of this

final state. If teleology is defined in this way, then our point of view is not teleological.[11]

Directions can be conceived more adequately, however, if we do not define them in relation to fixed goals. In Figure 3 one can eliminate goal *a* and fit in instead *b* or *c*. The direction A will remain the same in spite of the fact that it may point toward many different goals. The objective is not specific for the direction. On the other hand, if one displaces goal *a* into the position a_1, "direction leading to *a*" will be an entirely new direction in spite of the fact that the goal toward which it points remains the same. Thus a direction (for example, A) is not defined by goals, but it is the *intrinsic pattern of a certain movement.* This is exactly what I mean by calling the general trend of the organism a directional one.

as the goal changes

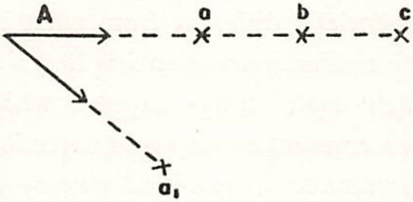

FIGURE 3

I do not want to deny, however, the teleology of the organismic activity which tends toward the attainment of fixed goals. This teleology is, however, not a primary but a secondary or derived feature of the organismic process. *It is not the goal which defines the direction, but, on the contrary, the intrinsic pattern of a direction which defines what object can become a goal.* According to our theory the directional pattern of the organismic total process is a trend toward increased autonomy. *Objects which are scattered along this direction may become secondary goals for organismic activity.*

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[11] It is only fair to point out that the much criticized "purposivists" almost never have used such a rigid and static concept of teleology.

In order to anticipate a well-taken criticism I wish to state that the tendency toward increased autonomy is important, but is not the only tendency in human beings. It appears as the sole source of human motivation only, if one considers, as we did, the organism from a solipsistic point of view, as it were; that is, when one considers it as a self-sufficient unit facing its environment. This, however, is a mere abstraction. The individual is not a closed unit, but only a relatively independent member of such superindividual units as the family and other social groupments, a participant in a culture and—in the broadest sense—a part of a cosmic order. This important aspect calls for a separate discussion. The abstraction which was implied in the previous discussion, namely, the viewing of the organism merely as an individual, is, however, useful from the didactic point of view, and will serve to demonstrate certain further aspects of the organism before entering into the discussion of the problem of the integration of the individual into superindividual organizations.

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III. THE PSYCHOLOGICAL FUNCTIONS

THE SYMBOLIC CHARACTER OF PSYCHOLOGICAL PROCESSES

IN developing our point of view with regard to the general dynamic trend of the organismic total process, we resorted primarily to physiological illustrations. The purpose of the present work is, however, to advance a theory of the integrated total personality. Psychological functions play a vast role in certain species, reaching their acme in man. No theory of personality can be adequate if it does not fully take into account this important type of function. A discussion of the psychological functions of the organism is necessary also to dispel the impression that the propositions made here are based primarily on physiological facts and then that the validity of these statements for the total organism is claimed. The discussion will be restricted here to certain fundamental issues. Some other aspects will be considered later in other connections.

We advance and will attempt to justify the thesis that the function of the so-called mental process is essentially a semantic one. By this we mean that "psychological contents" function as symbols and that psychological processes are operations with these symbols.

Symbolism is based on a very particular type of relationship, if the term "relationship" applies to it at all. The characteristic feature of symbolism consists in the fact that a given A—which frequently has only a very remote primary relationship to B, and sometimes no relationship whatsoever to it—*stands for* B, it *represents* B. The symbol sometimes is an abbreviation of the primary objects, a *pars pro toto;* at other times it is something remotely related to the object. Some original connection between an object and that which becomes its symbol frequently can be traced historically. Real connections, however, are not essential or necessary for symbolism. This is clearly shown in the fact that we can construct at any time an arbitrary set of symbols which had originally no relationship to the objects for which they now stand by arbitrary definition.

△ Symbolism is a triadic constellation, whose terms are: the (1) primary object, its (2) symbol, and a third member, the (3) subject, for whom the symbol *means* the object. The crucial factor is this third member, who (3) has to be endowed with the capacity to connect the symbol with its referent. This implies the ability of meaning function, that is, of "mentation." If we eliminate this third member the symbolism is destroyed, and what were previously symbol and referent become unrelated objects, such as the drawing "tree" and the plant "tree."

One could object that not only for symbolism but for any sort of relationship a third member, who relates the objects, is necessary. There is, however, an important difference. A relationship such as "A is bigger than B" depends upon the reciprocal property of the relata themselves, whereas in symbolism there need not be any real connection between symbol and referent excepting the one which is more or less arbitrarily set by the connecting member.

The symbolic relationship is quite unique in that it does not occur, as far as we know, outside the psychological realm. One may rightly say that the symbolic relationship is just as general and fundamental for the humanistic sciences as the causal relationship has been for classical physics.

The immense biological importance of the symbolic function consists in the fact that it enables the individual to deal, instead of with things or with complex realities, with their simpler substitutes which are incomparably easier to manipulate. This means the saving of an enormous amount of labor and time. A further advantage of the use of symbols is that it permits the avoidance of actual contact with primary objects which often would severely damage the organism.

The characteristic feature of things psychological is their symbolic nature, which distinguishes them from all other phenomena in the world. I do not wish to state only that symbolism is a highly important characteristic of mental life, but also to emphasize that all psychological functions can be understood as processes of symbolization. Psychological activity may also be called the symbolizing function of the organism. In order to demonstrate the symbolic nature of psychological processes it is desirable to review briefly the principal groups of psychological phenomena, following for the moment the conventional classification.

SYMBOLIZATION IN PERCEPTION, IMAGINATION, AND THINKING

The person is continually engaged in some sort of interaction with his environment: taking nourishment, avoiding danger, competing with other persons, etc. Besides these more direct and obvious and gross forms of interaction there are also some more delicate ones, the so-called sensory processes, where the organism is engaged, so to say, only tangentially with the objects of its environment. This sort of contact with the environment provides the organism with a wide range of information, which may become useful on later proper occasions for adequate gross behavior.

Certain organisms have the capacity to construct, on the basis of the tangential engagements which take place in the sensory processes, perceptual mental pictures. The organism translates the physiological sensory process into perceptions of colors, sounds, tastes, odors, etc.

Mental phenomena and their relation to physiological processes are even today frequently looked upon as a sort of miracle. That conscious phenomena, such as the "raw feel" of sensation, do exist is no more miraculous than the existence of physical phenomena or anything ? else in the world. They are demonstrable data and beyond the domain of reasoning. Difficult problems arise only when one considers the possibility and mode of interaction between mental and physical phenomena. Since the time when Descartes so strongly postulated the dichotomy of mind and matter, it has remained a puzzling question how two supposedly widely different "substances" may influence each other. How does it happen that a physiological process in the brain produces mental processes, or how is it possible that a psychological process like volition causes the muscles to move?

This puzzle, however, exists only in so far as a psychophysical dualism is admitted. For a monistic theory the problem does not exist at all. But unfortunately, monistic theories too often evade the real issue, and, instead of evolving an integrated picture of biological reality, achieve simplification by excluding arbitrarily one or another important feature. Some authors start by pursuing a psychophysical monism and end with a clear-cut physiological monism. The other extreme, namely, psychological monism, is not too frequent in science, although an exaggeration of the "psychogenetic" point of view may occasionally approach it. It seems clear that a monistic theory is acceptable only if it is broad enough to do justice to the physiological as well as to the psychological functioning of the organism. The holistic point of view bridges the fundamentally artificial gap between mind and body by recognizing the psychophysically neutral total organism. The person is neither physiological nor psychological, but a holistic unit which implies the capacity of both physiological and psychological functioning. If one does not identify the personality with the body alone, it is not *more* miraculous that the person can produce ideas than that he can produce bile—although, in a sense, they are both miraculous enough.

For this holistic theory of personality the paradox of psychophysical interaction does not exist. We do not have to answer the question of how two such different "substances" as mind and body can act on each other, because, strictly speaking, we do not assume that such an interaction takes place. In all its manifestations, the total organism is active, but in some of these activities psychological and in some others physiological features are prevalent, and thus for practical purposes the two fields can be distinguished. Neural processes cannot produce ideas, and thoughts cannot make the muscles contract, but the total organism, the person, can do both. In response to a change in its prevalently physiological functioning, the organism may produce mental phenomena, and in response to volition the organism may produce movements. The pattern of "interaction" between psychological and physiological function is not: physiological process—psychological process, and psychological process—physiological process, but: physiological process—total organism—psychological process; and psychological process—total organism—physiological process.

By rejecting the theory of psychophysical dualism, we do not mean to deny the value of the type of research which studies the so-called "psychosomatic relations." The consideration of psychological and somatic processes always in relation to the total organism places this type of investigation on a sounder theoretical basis.

Returning to the discussion of perception, it is hoped that now it has become clearer what we meant by saying that the organism elaborates perceptual mental images on the basis of tangential engagements with the environment such as are taking place in the physiological sensory processes.

After the perceptual data are produced they are used by the organism as symbols for objects of the environment. By the term "object" I do not mean metaphysical entities, *Dinge an sich,* but "empirical objects." It is not necessary to enter into the extremely complex philosophical debate on the nature of the object. In the next chapters (IV and V) an attempt will be made to define "object" from a biological point of view and to formulate some statements with regard to the nature of the "biologically relevant object." For the present purpose it is sufficient to point out that the object is far richer in traits than the perceptual datum which indicates the object for the observer. When one sees a white bird, that which is visually given is only a white spot of a certain form; but one perceives through this the object "bird." The difference between a given object and its visual appearance is very great. When we make such statements as that the bird is an animal, that it lives, flies, eats, etc., we are obviously referring to something different from the visual datum: a white spot. The visual datum will vary if one sees the bird from the front or from the side, when it is at rest or when it is flying, but the bird will remain the same bird. The visual image is smaller from a distance and larger when seen close by; but the bird remains the same size. The visual image will be different in the sunlight than in the dusk, but we do not think in such a case that the object "bird" has changed. The white spot is merely a visual datum, while the bird has many qualities which can be experienced by means of the other senses. The object "bird" also includes meanings which, of course, cannot be *seen*. The object is incomparably richer in content than its visual appearance. On the occasion of the visual perception of an object, the visual datum is the symbol for the whole object, it indicates the object for the observer, it refers to it or—in the terminology of F. Brentano—is characterized by "intentionality" directed toward an object. The data given in perception are much simpler than the object itself. Hence the great economic value of perception for the organism.

In the process of perception the organism is not passive like a mirror which reflects the picture of the objects, but actively elaborates and constructs the perception. First of all, there is a careful perceptual selection: only certain data are used for the construction of the picture of the object, while others are omitted. Another group of phenomena from which complex perceptual elaborative activity can be inferred are those which are treated in psychology under the heading, "problems of constancy." Identical physiological sensory processes are not translated into perceptions in exactly the same way, but so that they can best fulfill their biological role, which is: to present the object adequately. A few examples may illustrate this. The brightness of a color depends, as a rule, upon the amount of diffuse light reflected per unit of surface. If one places a piece of coal in bright light and a piece of chalk in the shadow, the former may reflect more diffuse light per unit surface than the latter, but in spite of this we perceive the coal as approximately black and the chalk as approximately white. The factor of illumination is somehow taken into account, not by explicit reasoning but through the perceptual activity itself. Under medium changes of illumination we have no difficulty in distinguishing the brightness of colors, although this may not be possible under extreme or unusual conditions of illumination. Another example is the constancy of size. The size of visually perceived objects depends, on the whole, upon the visual angle at which the light rays fall upon the retina, in other words, upon the size of the retinal image. Accordingly, an object would appear smaller at a distance than from a close view. This law is, however, not valid for medium distances. If it were, a person would appear from a close view as a giant and from a few yards' distance as a dwarf. Actually, we see objects within medium limits of distance as about the same size, and one needs the painter's training and sophistication to do otherwise. In the perceptual activity, somehow, account is taken of the distance. The phenomena of constancy are of great value for the organism. Since the conditions in the environment are continually changing, without perceptual constancy one would be seriously handicapped in recognizing objects.

In elaborating perceptual pictures, not only data coming from the sensory organ which is directly involved in a given perception, but also data from other sense organs are utilized. Thus most of the spatial attributes of visual perception are based partly on kinaesthesis. In the completed visual perception the spatial attributes of "above," "below," "right," "left" appear to us visually, although we know since the famous experiment of Stratton[1] that this largely depends on kinaesthetic experiences, or rather on the coordination of vision and kinaesthesis.

These and many other examples which could be quoted from the psychological literature demonstrate definitely that the organism, in the process of perception, does not reflect passively the impressions coming from the environment, but elaborates them actively in a rather intricate fashion. The work involved in the production of mental phenomena other than perceptions shows even more the active character of the translation of organismic happenings into phenomena of consciousness.

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[1] G. M. Stratton, Vision without inversion of the retinal image, Psychological Review, 4:342–360, 463–481, 1897.

The statement that perceptions function as symbols does not imply that they are merely labels. They are just as much functions of the person as are the physiological processes. They possess an intimacy and immediate closeness to the personality. This is even more true for certain other types of experiences, such as emotions. Furthermore, in the psychological processes symbol and referent are not clearly separated, but blend with each other. A perception, for example, does not only signify the object, but the object is viewed through and in it.

It is worth while to note that symbol and referent tend to merge into each other even in the more remote and abstract types of symbolizations. An example of this has been well stated by G. Sarton: "It is only after centuries of apparently sterile but necessary quarrels and after the final establishment of the experimental method and attitude that we have slowly learned to consider words as symbols, which, as far as scientific purposes are concerned, would be usefully replaced by arbitrary signs having no signification but the one explicitly defined. The distinction between names and things is now so deeply rooted in the mind of scientifically trained men that they would find it difficult to understand how they could ever be confused, if they did not detect examples of such confusion almost every day in their own environment."[2]

Summarizing, we may distinguish two aspects in the perceptual process: the production of a type of "raw feel," perceptual pictures and the utilization of these pictures as symbols for empirical objects. The perceptions are produced by the organism on the basis of sensory processes. Perceptions are not passive reflections; the organism elaborates them actively according to certain biological needs. Perceptions, and mental phenomena in general, are not mere labels but inherent parts of the organismic total process. In mental processes there is a kind of fusion between symbol and referent. The object is not only meant, but also experienced, in the perception.

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We have said that the great economical value of perception is due to the fact that it is simpler than the objects for which it stands. *Images* are still more simplified symbols and the organism is able to operate with them with still greater ease and freedom. There is a close genetic and phenomenological relation between perceptions and images. In infancy images are vivid and not markedly different from perceptions. Later, as a rule,

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[2] G. Sarton, Introduction to the History of Science, Baltimore, Williams & Wilkins, 1927, vol. 1, p. 7.

they lose their vividness and become more sketchy. This apparent impoverishment of imagery is, however, not a regressive process but a positive development. This point can be illustrated by the following case. In an investigation[3] on spatial orientation, my subjects had to draw the connecting path between two given points of the city. One of the subjects did extremely poorly in this test. She was, for example, uncertain whether two main avenues, separated by only a few blocks, were parallel or perpendicular to each other. Since she had at least a good average intelligence, and since she had spent practically all her life in that city, it seemed that she must have some gross defect of imagination. A closer investigation, however, gave the following, rather unexpected result: She had a remarkable visual eidetic imagery. In the above-mentioned test situation she imagined herself standing at a given place and visualized the scenery most vividly, but had only a very hazy knowledge of the more distant parts which could not have been *seen* from that vantage point. In other words, she had a vivid image of segments of the city, but not of the relations between the various segments. In this case, in spite of her eidetic imagery, this person was not as well equipped for the ordinary tasks of imagination as is the average person who possesses only vague, schematic images, but which allow him to grasp broader connections.

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[3] A. Angyal, Über die Raumlage vorgestellter Örter, Archiv für die gesamte Psychologie, 78:47–94, 1930.

The advantage of images as compared to perception does not lie in their greater simplicity only. They allow the organism to deal also with objects which are not included in the situation of the moment. They broaden the perspective and the sphere of influence of the organism over spatially distant parts of the environment and over the past (memory) and the future (planning, foresight, etc.) as well.

Symbolization is still more effective in *thought processes* because of the use of very remote, but highly condensed and simplified, symbols. A single concept stands as a substitute for a whole series of objects and relationships. The symbols involved in thought processes are representative of relation and system connections between objects. With the aid of these symbols a wide range of intellectual operations is possible which are of a high economic value for the organism.

SYMBOLIZATION IN EMOTION AND CONATION

Perceptions and images are symbols which refer primarily to the *environment*. Besides these symbols of the environment there is a wide range of psychological phenomena which indicate the states and needs of the *organism*. The sensations of pain, hunger, thirst, and other internal sensations belong to this group. The main forms of expression of the state of the organism are, however, the emotions.

For the sake of conceptual clarification certain distinctions may be useful. The term "emotion" is used with various connotations. Some writers seem to use this term to mean samples of total behavior in which emotional experiences occur. This form of behavior contains not only psychological components, but bodily reactions as well: clenching of the fist, tremor, palpitation, rapid breathing, and the like. To this total behavior we may apply the term "emotional behavior," while the term "emotion" could be reserved to denote the psychological aspect, that is, the experience of emotion. In the following discussion we are interested in the psychological aspect of emotion.

Wundt

There is a great phenomenological variety of emotions. Wundt, as is well known, distinguishes three emotional dimensions: tension-relaxation, excitement-calming, and pleasantness-unpleasantness. These three dimensions probably do not suffice for an adequate characterization of the multitude of emotions, but it seems to me that they designate three, perhaps the three most important, features of emotional experience. I suspect, although I cannot as yet definitely prove, that the first two of these dimensions—tension-relaxation and excitement-calming—are of the nature of proprioception. Emotional behavior occurs whenever the organism is confronted with a biologically significant external or internal situation. The organism makes a variety of responses to such a situation. 1) It responds to the situation first of all with its neurovegetative apparatus. The proprioception of these vegetative changes would correspond to the dimension of excitement and calming. 2) The organism responds to the situation also on the neuromuscular level. Gross or incipient muscular activities take place. The perception of the changes of muscle tonus may correspond to the dimension of tension and relaxation.[4]

If our assumption is correct, then the sort of theories advanced by James and Lange may be valid if restricted to these two dimensions. It is not necessary to discuss separately the types of symbolization which take place in proprioception because the mechanism involved is approximately the same as in external perception.

These two dimensions, although they recur constantly, are not the distinctive characteristics of emotions. The really specific feature of emotion is represented by the dimension of pleasantness-unpleasantness. To this dimension the theory of James and Lange certainly does not apply. Watson's theory in which it is assumed that physiological tumescence and detumescence are the somatic basis of pleasantness and unpleasantness is much too naïve and cannot be profitably discussed here.

We consider the feeling tone of emotions as the *experience of the state and of the situation of the person un-*

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[4] I make this suggestion only very tentatively. The experience of tension may not refer to muscular tension alone, but to tension in a much broader biological sense. This latter concept will be introduced and discussed in Chapter V.

der the aspect of value. The biological situations are constantly evaluated by the organism from the point of view of their significance for the life process. The emotional tone is the experience of such significances. It should be clear, however, that in emotion the significance of the biological situation is not experienced in thoughts and judgments, but in a very intimate and immediate manner, as joy and sorrow, depression and elation, or quite generally as various shadings of pleasantness and unpleasantness. It has already been pointed out with regard to perceptions that they are not to be considered as mere labels. This is true, even to a greater extent, of emotional experiences. They have a high degree of intimacy and closeness. The fact that they are elaborated and utilized by the organism as symbols of its states of welfare does not detract from this view.

Symbolization, in a sense, implies a certain degree of distance between symbol and referent. Because of the characteristic ego-closeness of emotional experiences, their symbolic nature is not as obvious as, for instance, that of perceptions. It may be useful, therefore, to clarify what is the symbol and what is the primary fact to which the emotional experience refers.

The primary fact is a situation having a positive or negative value for the person. Success, failure, a threat to one's personal security, disappointment in one's expectations, the loss of a close friend, or, on the other hand, the opening up of new opportunities, the achieve-ment of goals, a lucky constellation of events creating a fortunate turn in one's personal affairs are examples of such situations which have a distinct positive or negative value for the person. Such ego-relevant situations are in themselves not experiences, but objective states of affairs. They are the primary facts which function as referents in the formation of a symbolic relation.

The value aspect of these objective situations is *experienced* in the form of emotion. In other words, *emotional experiences are symbols of value-laden ego-relevant facts.* This brings to the fore the processual character of emotion as an evaluative experience. It is in brief the most immediate form of personal evaluation. Value judgments may precede, accompany, or follow, but they are by no means indispensable for emotional experience (for instance, anxiety, sorrow, or experience of happiness without any reason known to the person).

These statements must be qualified in certain respects. The experience of value is not the whole of emotional experience, but merely its most characteristic specific feature, the various shadings of the feeling tone. In addition, the experience of vegetative changes and of changes in muscular tension is practically always involved. Furthermore, in certain emotional experiences such as anger or fear, conative features are present which color significantly the total experience.

The emotional coloring does not always indicate correctly the significance of a biological situation. Pleasantness does not always mean usefulness and, similarly, unpleasantness is not always a reliable indication of harmfulness. Such discrepancies arise *mainly* from the following 2° two sources. 1) Emotions refer to and work best under *original, standard* conditions. There are poisons which have a pleasant taste, but in primitive surroundings the majority of objects with pleasant taste are useful for the organism. 2) Emotions refer primarily to the *immediate* situation and not to later consequences. The use of alcohol may be harmful to the organism, but for the moment it speeds up certain vital processes, alleviates suffering, and dissipates worry. Therefore, the emotion in such case represents correctly the immediate state of the organism.

Pleasantness and unpleasantness have a high motivating value for one's conscious activity. They are the only *immediate* guides of one's conscious behavior. It is, however, unjustified to regard the "pleasure principle" as the only or even as the main source of human behavior. The organism tends to proceed in a direction which is inherent in its nature. This direction is the measuring tape for the significance of a given state or situation. Pleasantness and unpleasantness are only crude indicators of biological significance. Pleasure may be divorced from its biological background and pursued for its own sake, but then it easily becomes almost a perversion. In Rome in the later period of the Empire it was the custom at luxurious festivities that when surfeited and gorged the participants tickled their throat with a peacock feather, thus inducing vomiting in order to be able to eat and drink more, that is, to get more "pleasure." If there existed such a simple method as a peacock feather to increase sex appetite, it would probably enjoy great popularity in our day.

HA !

The universality of the principle of pleasure seeking cannot be saved by assuming "unconscious pleasure." Those facts which are quoted as examples of unconscious pleasure seeking show only that the organism may drive toward goals in spite of the fact that they cause pain. One can assume in such cases an unconscious pleasure only if one is already convinced a priori of the universality of the pleasure principle.

Conative processes are no less symbolic in character than any other class of psychological phenomena. As has been stated, the organismic total process is characterized by a directional trend, leading from states of lesser autonomy to states of greater autonomy. This trend branches out into a number of specific manifestations, such as drives and urges, which in themselves are not psychological. The basic organismic urgency and its specific ramifications are elaborated symbolically and experienced psychologically by the organism as conscious conative processes: striving, wishing, craving, willing, etc. Both for emotional tone and for conation the primary objects are not physiological, but totalistic, organismic states and processes. In conation not only a translation of psychophysically neutral states into psychological processes takes place, but the conative processes are characterized also by a tendency to be translated into bodily activities.

THE BIOLOGICAL SIGNIFICANCE OF SYMBOLIZATION

The symbolic representations of environment and of the individual are not perfect. The psychological phenomena are not always entirely reliable indicators of the primary objects to which they refer. If one wishes to use a rather objectionable metaphor and compare symbolic elaboration to reflections in a mirror, one has to add that the "mind" is a curved mirror which reflects the object in more or less distorted pictures. Examples of distortion are illusions of perception and illusions and falsifications of memory. In the field of emotion and conation we also find distorted pictures somewhat comparable to illusions. We may experience as pleasurable a state of our organism which is harmful for its welfare and we often wish and strive for things which we do not need. Conscious intention frequently misses the real target of one's deeper urgency, a fact of which psychoanalysis is keenly aware. The "mind," the ability to have a symbolic grasp of things, is the greatest power which nature has given to some of its creatures, but it is also the deepest source of error and suffering. One of the important tasks of an organismic psychology should be to shed light on the processes of distortion brought about by the "mirror of the mind." Such knowledge might also indicate the means for correcting the imperfect pictures.

In spite of all these imperfections, the symbols represented by psychological phenomena are reliable enough to be able to fulfill in the total organism a function, the importance of which can hardly be overestimated. With the emergence of psychological functions a highly significant change occurs in the entire organization of the organismic total process. The two essential factors of the organismic total process, that is, the organism and its environment, are symbolically represented in the "mind." *The individual and the environment can now meet on the symbolic, representative ground of psychological functions.* Their encounter results in a process the dynamic structure of which is essentially identical with that of the non-psychological levels of the organismic total process. *Life is now carried out partly on a symbolic level, but without a change in its general dynamic trend.* In the psychological realm life takes place, not through the interaction of the concrete individual with a concrete environment—which is only tangential—but by the interaction of symbols representing the individual and the environment. With the growth of the symbolic function of the organism the center of gravity of life is shifted more and more toward the psychological realm.

What does enrichment through symbolic activity signify for the organism? The psychological activity has first of all the value of an important "organ."[5] It stands in the service of the primitive functions of the organism. Psychological activities are a very efficient support of the organism in such functions as acquiring food, self-defense, mating, and care of the young. Human beings who show a high development of the symbolic functions have relatively little contact with primary things. Their affairs are settled largely on the psychological level. They experience their own states and needs in symbols of emotion and conation; they obtain information, in the form of symbols, with regard to the conditions of the environment. Thus, the essential factors for the solution of most problems which man encounters are given in symbols. These problems are solved mainly with the aid of psychological operations. The handling of the concrete material is, in characteristic cases, nothing more than the realization of the end-result arrived at by psychological processes. For example, one does not start to build a house by putting stones and other materials together, but one builds it up first "in one's mind."

Symbolic functioning which originally manifests itself as a psychological phenomenon is purposely cultivated, refined, and exploited by man and thus becomes a method which is fundamental for most of man's cultural devices. Language, writing, drawing, the various organized systems of signs, the monetary system, and the like are all based on the principle that complex realities can be replaced by simple symbols which can be manipulated with incomparably greater facility than the primary things themselves. One can realize the vast importance of the use of symbols for human culture if one thinks, for example, of the modern library which is a collection of written symbols concentrated in a relatively small space, although the referents of these symbols embrace almost the universe.

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[5] "Organ" does not mean originally only a material structure. The Greek word ὄϱγανον means "tool" in general.

In many instances one does not stop at building up a set of symbols referring to primary objects. One goes further in the effort for economy, building up a second set of symbols as substitutes for the first set of symbols, and so on. Thus, in many cases a long chain of symbolic references is interpolated between a given symbol and the primary object. For example, the single books of the library are themselves huge collections of symbols. For further simplification the books themselves are replaced by a second set of symbols. In the catalogue a single card substitutes for a book. This secondary set of symbols not only has the value of greater simplicity, but can be arranged independently of the primary objects in convenient and multiple ways (for example, according to author and subject).

Psychological processes are of great value to the organism because they assist in an extremely useful way in satisfying its primary needs. The emergence of symbolic functions has, however, a further significance for the organism which is not less important than the economizing aspect of these processes. The emergence of psychological functions modifies significantly the whole structure of the organismic total process. Previously the general dynamic trend of the organismic total process was defined as a tendency toward increased autonomy. This tendency was illustrated with examples of prevalently physiological functions. These functions represent, however, only certain methods for the realization of the general dynamic trend of the organismic total process. Psychological functioning provides the organism with new means of expressing its inherent tendency. There are psychological ways of self-aggrandizement and self-assertion such as winning a debate, acquiring titles and honors, studying and investigating the phenomena of nature and so dominating them on a theoretical level. ✓From the psychological process the organism obtains *new means,* new methods to achieve a greater autonomy and the possibility of a tremendous widening of the field which can be brought under the autonomous government of the organism.

THE RELATION BETWEEN PSYCHOLOGY AND THE SCIENCE OF PERSONALITY

The present study being concerned with problems of the total personality, it is not intended to enter into a discussion of any detailed psychological question, or of any other segmental aspects such as the physiological or the sociological. It seems useful, however, to point out the relationship between psychology and the study of personality, and to indicate what type of psychology might contribute most effectively to the study of personality.

The task of a holistically oriented psychology would be the study of the symbolic functions of the organism. This means the study of mental phenomena in relation to those primary personality occurrences which they symbolize. For the Wundtian type of psychology and for those psychological systems which immediately succeeded it, the subject-matter has been rather sharply defined: the study of immediate experiences, that is, of conscious phenomena. This type of psychology could be called consciousness-immanent psychology because it proposes to study the conscious phenomena as such, that is, in relative isolation from the total organism. The type of psychology which would seem most profitable for a science of personality has to be consciousness-transcendent. This psychology has to take full cognizance of the symbolic nature of mental functions and has to relate the conscious phenomena to non-symbolic personality processes. It has to consider such problems as: How accurately do perceptions present the objects? How reliable is the emotional presentation of the state and situation of the personality? What distortions can take place during the symbolic elaboration? What are the factors and conditions which may reduce or increase the amount of distortion?

The study of mental processes as consciousness-immanent phenomena is almost comparable to the study of a written text merely as script, without reference to language-content. This comparison, of course, is only partially correct. We shall have the opportunity to point out later that the mental functions form a relative autonomy within the total organism which permits to a limited extent the meaningful study of intra-psychic relations also.

Psychology, despite the earlier definition, has not restricted itself to the study of conscious phenomena alone; the earliest examples of not strictly consciousness-immanent psychology have been psychophysics and physiological psychology. Attempts have been made to correlate physical factors (as, for instance, the investigations of "Weber-Fechner's law") or physiological processes (as in the study of sensory functions) with conscious phenomena. The study of bodily changes (respiration, heart beat, etc.) in emotional states may also be mentioned here. It seems to us that the results of this type of study have not been fruitful for the following two reasons. 1) The psychological processes have been correlated directly with physical or physiological factors instead of with holistic, psychophysically neutral personality processes. 2) The relationship between the two sides of the equation has been thought of as causal or parallelistic instead of symbolic in nature. The common error has been the theory of psychophysical dualism.

Psychoanalysis has also made an attempt to broaden the field of psychological studies beyond the realm of consciousness. However, it does not recognize the universally symbolic nature of all conscious phenomena. It also fails to recognize the integrated, psychophysically neutral personality processes and instead *unconscious mental* functioning is assumed. In other words, personality processes have been psychologized and become, in psychoanalysis, unconscious *mental* functions.

An extreme opposite to consciousness-immanent psychology is behaviorism. Behaviorism can be barely called psychology at all, and not unless we wish to give the same name to disciplines so different that the one defines its subject-matter as the study of conscious phenomena, while the other does not even admit the existence of consciousness. According to certain statements, behaviorism studies the activities of the organism as a whole. If behaviorists would adhere to this principle, behaviorism would be a variety of the science of personality. The behaviorists, however, usually pay not much more than mere lip-service to the holistic principle. Actually they are physiological reductionists like Watson, or even physical reductionists like P. Weiss. Strict behaviorism is not a psychology, because it excludes mental phenomena; for the same reason neither is it an adequate study of personality.

There are other approaches in psychology, which come closer to a consciousness-transcendent type in the sense defined above. Brentano's theory of the universal intentional character of conscious phenomena may be considered as a move in this direction. Even more significant is the kind of approach which has been recently attempted by E. Brunswik in the study of perception. He proposes to study the accuracy and reliability of the perception in presenting the object rather than perceptions as mental phenomena per se.[6]

The task of a psychology which could be most useful for the study of personality would be not only to investigate the intra-psychic organization of mental processes but, recognizing the universal symbolic character of mental function, to relate it back to the holistic personality background out of which these mental processes are elaborated.

SUMMARY

Symbolism is a specifically psychological relation which presupposes a being endowed with the capacity of linking the symbol with its referent. This requires mentation.

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[6] E. Brunswik, Wahrnehmung und Gegenstandswelt, Grundlegung einer Psychologie vom Gegenstand her, Leipzig, Deuticke, 1934. Brunswik's definition of the object which is presented in the perception as a *metric* object may be questionable, but his rejection of too much immanentism in psychology is very well in agreement with our point of view.

THE PSYCHOLOGICAL FUNCTIONS

Psychological activity has been considered here as the symbolizing function of the organism. The symbolization involved in perception, imagination, thinking, emotion, and conation has been briefly discussed.

The organism has the capacity to elaborate on the basis of its tangential engagements with the environment, which take place in the sensory processes, perceptual mental pictures such as colors, sounds, and tastes. These in turn function as symbols of the empirical objects.

In constructing perceptual or any other psychological data the organism is not passive like a mirror which reflects the image of the objects, but elaborates them actively in a rather complex fashion.

The economic value of perception is due to the fact that it is simpler than the objects for which it stands. Images are still more simplified symbols. They allow the organism to deal also with objects which are not included in the situation of the moment.

Symbolization is even more effective in thought processes where a single concept may stand as a substitute for a long series of objects and relationships.

In emotion various factors are involved. They contain proprioception of neuromuscular and neurovegetative processes. The specific components of emotions are, however, the feeling tones of pleasantness and unpleasantness. The feeling tone is considered as the experience of the state and situation of the person under the aspect of value. Feeling tones function as symbols which refer to the welfare of the organism.

Conative conscious processes are symbols in which the general organismic urgency and its specific ramifications are experienced.

The symbolic character of psychological phenomena does not reduce them to mere labels. They are part functions of the organism and have intimacy and personal closeness.

The conscious phenomena are not entirely reliable symbols of the primary objects to which they refer. In the process of symbolic elaboration distortions also take place frequently.

The value of symbolic processes is, first of all, economy. Symbols are simpler, can be dealt with more easily than primary objects, and also permit the subject to avoid direct contact with objects, which frequently would cause damage to the organism. Symbolic functioning is further exploited in certain cultural devices such as language, writing, monetary systems, and other organized systems of symbols.

In the psychological processes the organism obtains new means to achieve greater autonomy. Thus the field which can be brought under the autonomous government of the organism is tremendously widened.

The task of psychology which could be most useful for the study of personality would be to investigate not only the intra-psychic organization but to recognize the universal symbolic character of mental functions, and to relate them to the holistic personality background, out of which they are elaborated.

IV. ORGANISM AND ENVIRONMENT

ORGANISM AND ENVIRONMENT ARE NOT SEPARABLE AS STRUCTURES IN SPACE

ONE of the basic characteristics of the point of view which has been developed in the previous chapters is that life is not to be considered as an intra-organismic happening, but as a process which takes place *between* organism and environment. This statement may not sound quite convincing and may seem to contradict certain facts. We know, for instance, that life continues even in an encysted amoeba in spite of the fact that it is separated from its external environment. In order to make our point of view clear, it is necessary to define precisely the concepts of organism and environment and their interrelationship. These concepts are of basic importance for the present theory. In the process of clarification of concepts some of the previous statements will have to be amplified. At the same time the way will also be prepared for carrying the discussion one step further.

I do not know of any serious attempt to draw the line of demarcation between individual and environment, that is, of an attempt to answer the question of where the individual ends and the environment begins. This question is usually dismissed with the semi-jocular statement that the individual is within the skin and the environment is outside of it.

Any attempt to make a morphological separation of organism and environment fails and necessarily leads to endless, hair-splitting dialectic. It will, however, be useful to go into this dialectic to some extent, not because one might expect positive results, but because it will demonstrate that the consideration of organism and environment as structures in space is not a workable point of view.

Taking literally the statement that the organism is within the body surface and the environment outside of it, one has to consider, for example, that one should accordingly call the food before ingestion a part of the environment and after ingestion a part of the organism. It would be very strange logic, however, to regard an object at one time as environment and at another time as part of the organism merely because it is located in some internal cavity of the body, such as the stomach. Thus, the criterion for being part of the environment or of the organism would merely concern the location of an object in space. The fundamental difference between organism and environment—a difference we feel exists—would thus be almost completely nullified. Is it not more logical to regard the content of the gastro-intestinal tract as environment rather than as part of the organism, that is, as an insinuation of the environment into the body? The same question may be asked with regard to the air contained within the lungs. To take another example, should we regard urine, when it is in the bladder, as a part of the organism and after it passes the urethral orifice as part of the environment? It, therefore, appears that one is not true to the facts when one states that the organism is a massive structure contained within the external body surface. Rather, it appears that the environment penetrates the organism at various points and occupies a considerable portion of the space contained within the body surface.

Examples such as those just mentioned indicate only that certain parts which are located in the internal spaces of the organism may belong to the environment, but they do not exclude the possibility of drawing a line of separation in space between organism and environment. Such considerations, however, as have been made with regard to the contents of the gastrointestinal tract, of the air spaces of the lungs, and of the contents of the bladder, can be made also with regard to other regions of the body structure. Are, for example, blood and lymph still environment, or are they already parts of the organism? One may regard the nutritive substances contained in the lumen of the intestines as environment; but are not the same substances still to be regarded as environment when they are absorbed and passed from the intestines into the current of lymph and blood? The blood has been called "internal environment" by Claude Bernard. Does it make any essential difference that the same substance is no longer in the intestines, but is flowing in the cardiovascular bed? Does an environmental object become organism merely by the passage from one space to another? Would it not be rather justifiable to call the non-cellular components of the blood "environment"? But even with regard to the cellular components of the blood, there is some uncertainty as to whether they should be regarded as part of the organism or of the environment. For example, what is the difference between a phagocyte and another monocellular being, for example, a bacterium occasionally contained in the blood stream? One could say that the phagocyte belongs to the organism because it exerts a useful function in the organism. Usefulness, however, is not a sufficient criterion to decide whether something belongs to the organism or to the environment. Utilitarian relations exist also in the case of symbiosis, but we would not regard the symbiotic animal or plant as a part of its symbiont. If we take the convergence of functions to mutual usefulness as a criterion of "belongingness" to the organism, then we should be compelled to consider, for example, the *bacteria coli* in the intestines as part of the individual, since these organisms probably have a useful function in the digestion of cellulose. In that case one could state perhaps that the phagocytes belong to the organism because they originate from the organism itself, while the bacteria do not derive from the organism. But the genetic derivation itself is not an adequate criterion either. We would certainly hesitate to call the sputum a part of the organism or the egg a part of the hen.

One could carry the argument even further and ask whether the metabolically inactive intercellular substances which form a considerable part of certain tissues (bones, cartilages, and other tissues) are to be regarded as much a part of the organism as metabolically active cells. Distinctions can be also made within the cell. The cytoplasm not infrequently has been regarded as the "environment" of the nucleus. Considering the cytostructure, how should one classify, for example, those granuli of the cell body which represent an actually inactive storage of substances, or the content of those minute channels within the cell body which possibly have a function for the cell analogous to the cardiovascular bed for the macroorganism?

These examples may suffice to indicate how vague and uncertain is the theoretical distinction between environment and organism. Such vagueness and uncertainty exist, and not only because the borderline between organism and environment is not a sharp one, for such a statement would not adequately express the existing state of affairs. We shall try to show in what follows that it is, in principle, impossible to draw any line of separation in space between organism and environment because *organism and environment are not static structures separable in space, but are opposing directions in the biological total process.*

ORGANISM AND ENVIRONMENT

THE DYNAMIC DEFINITION OF THE RELATIONSHIP BETWEEN ORGANISM AND ENVIRONMENT

The subject-matter of biological considerations is primarily processes and only secondarily morphological structures. We have already stated (page 20) that the existential form of the organism is a dynamic one or, as Jennings states it, "The organism is a process." This requires that the organism be studied from a dynamic point of view.

As has been indicated, a *morphological* distinction between organism and environment is impossible. We must now renew our endeavor to distinguish between organism and environment and to determine the reciprocal relationship between them by *defining the concepts of organism and of the environment in dynamic terms.*

We have previously considered the life process as the resultant of autonomous and heteronomous determinations, in other words, as a resultant of self-government and outside influences. Of the total process of life a *unified system of factors* can be separated out by abstraction. However, not every moment of the life process is organized into that system. The life process in its concrete form also contains factors alien to the system, or "random" from the point of view of the system. The biological total process results from the interaction of system-determined (self-governed, autonomous) factors and factors which are alien to the system (governed from outside the system, heteronomous). The antithesis organism-environment dynamically expressed is the antithesis of autonomy-heteronomy. Organism and environment are the reification or, at most, the "structural precipitate" of autonomy and heteronomy.

In a study of biological dynamics we do not ask whether a given morphological entity is a part of the organism or of the environment. Rather, we wish to determine whether a part process occurs by virtue of autonomous (organismic) or by virtue of heteronomous (environmental) determination. Thus, for example, we do not ask whether the contents of the stomach belong to the environment or to the organism, but whether the processes going on in the lumen of the stomach are system-determined (autonomous, organismic determination) or are due to factors foreign to the system (heteronomous, environmental determination).

The answer to such questions has already been given partially. There is no biological process which is determined entirely organismically or entirely environmentally; it is always a resultant of both factors. Any biological process can be expressed by the ratio of autonomous and heteronomous government ($a:h$) active in them. The relative values of a and h, however, are very different in the various biological manifestations. For example, the processes going on in the gastrointestinal tract are, on the one hand, heteronomous, environmentally determined through the physical-chemical properties of the food but, on the other hand, they are also autonomous, organismically determined: mechanical work of the stomach and intestines, secretion of the digestive glands. In the biological processes taking place in the blood, the external determinations play a smaller role and internal determinations a larger role than in the processes of digestion. The former are organismically governed to a larger extent than the latter. In the intracellular processes the proportion is even further displaced in the direction of the organismic determination.

We cannot tell whether a structure belongs to the organism or to the environment, but we can determine *to what extent a process is respectively organismically or environmentally governed.* The dynamic relation between individual and environment may be visualized in Figure 4.

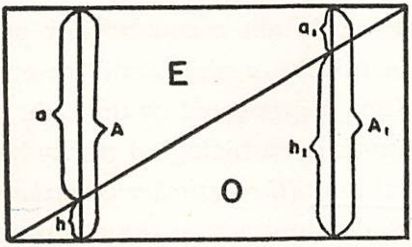

FIGURE 4

The lower triangle represents the organism (dynamically autonomous determination), the upper triangle the environment (dynamically heteronomous determination). Such vertical lines as A and A_1 represent two samples of biological processes. The proportion $a:h$ and $a_1:h_1$ is the expression of the dynamic relation between the individual and the environment in two given biological processes (A and A_1). Thus we see that although it is impossible to separate morphologically organism and environment in space, the relation between environmental and organismic determination can be defined dynamically. Such a relation is expressed in a ratio which indicates the relative potency of the two dynamic factors of which every biological process is a resultant. The relative values of the two factors vary in the various "regions" of the biological total process: in some regions the environmental determination prevails, in others the organismic government is the weightier factor. Neither of the two factors has an independent existence. They are abstracted from biological reality. Within the biological realm we do not encounter any process which would be exclusively organismically determined. The "pure organism" (represented by the right vertical side of the diagram) is not a biological reality but a concept of a theoretical limit (*theoretischer Grenzbegriff*). An organism which does not act on the environment in the direction of its specific tendency (toward increase of autonomy) is not a living organism at all. Similarly, the "pure environment," represented by the left vertical side of the diagram, is also only the concept of a theoretical limit. There is no environment without an organism. The concept "external world" must be clearly distinguished from the concept "environment." The external world can be called environment only when and in so far as it is in interaction with the organism.

In conclusion we may state that the conception of organism and environment as morphological entities which are separable in space is inadequate for the description of biological phenomena. They become fundamental biological concepts if we define them as dynamic factors. Dynamically expressed, organism is self-government and environment heteronomous influence. Every concrete biological process is a resultant of these two factors. The relationship between these two factors can be expressed theoretically in the ratio $a:h$ in which the relative values of a and h vary from case to case.

It has been pointed out in the previous considerations that the body surface is not the boundary of the organism. It has been emphasized that the organism is entirely permeated by the environment which insinuates itself into every part of it. On the other hand, the organism does not end at the body surface but penetrates into its environment. The realm of events which are influenced by the autonomy of the organism is not limited to the body but extends far beyond it. *Every process which is a resultant of the interplay of the organismic autonomy and the environmental heteronomy is part of the life process, irrespective of whether it takes place* *within the body or outside of it.* The biological process of feeding oneself does not begin with the chewing of one's food; the preparation of food, the raising of vegetables are also "biological" activities in the broader sense of the word. Such processes are the resultants of the autonomous activity of the organism and of heteronomous happenings in the environment and hence are, by definition, biological processes. To give other examples, locomotion by artificial means, transportation, is just as much a biological process in a broader sense as is locomotion by means of body structures; the clothing of man is just as much a part of the organism in this broader sense as the fur and feathers of the animal, artificial weapons just as much as natural weapons, and so on.[1]

The point of view I am trying to express may be made clearer by stating that in the process of building a house, for example, not only the necessary muscular and symbolic activity of the worker should be regarded as a biological process but also the progress of the construction. This process is partly governed by the organism. It is a resultant of an autonomous, organismically governed remoulding of a heteronomous environment. Our point of view can be further clarified by stating that in a worker not only the hands but also, in a certain sense, the hammer are parts of the organism. I do not intend to disregard differences but I wish to emphasize *significant relationships* which are more than superficial analogies. Of course there are great differences between neuromuscular organs and an artificial tool, or between muscular contractions and the movements of a screw driver. The first is part of a physiological metabolic unit, the second is not. However, in one very essential respect they are alike: they carry out part functions in the organismic total process. Artificial instruments and body organs are both tools in the service of life, and *the instrumental relationship of the parts to the whole is precisely one of the essential factors which characterize certain systems called "organisms."* The term itself, "organism" (organ = tool) means a system in which the parts are the instruments, the tools of the whole.

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[1] The term "biological" is not used here as the opposite of cultural; the term in our usage refers to cultural phenomena as well. The justification for the use of the term in this broad sense may become clear in the later parts of this discussion (Chapter VI).

We may state in conclusion that the life process does not take place only within the body surface, but involves a much broader realm of events. Such a broad definition of biological happenings is unconventional but necessary in order that justice be done to the problems of the total personality.

THE CONCEPT OF THE BIOSPHERE: THE SUBJECT-OBJECT DIFFERENTIATION

The broadened concept of life does not refer to an intra-organismic happening, but to a process which covers a much broader field than the body. Life involves both intrasomatic and extrasomatic happenings. The limits of life extend as far as the organism is able to exert an influence on the events in the world. In the German language there is a rather expressive term to denote the realm in which life takes place, namely, *Lebenskreis*. Accordingly I propose to call the realm in which the biological total process takes place the "biosphere,"[2] that is, the realm or sphere of life. The biosphere includes both the individual and the environment, not as interacting parts, not as constituents which have independent existence, but as aspects of a single reality which can be separated only by abstraction.

Several authors have emphasized the very intimate relationship between organism and environment. Such a relationship forms an essential point of certain biological theories (for example, those of Child and Uexküll). Here, however, a more radical attempt is being made: we regard the life process as a unitary happening, as an organized single process whereof the organism and the environment are only abstracted features. Instead of studying the "organism" and the "environment" and their interaction, we propose to study life as a unitary whole and endeavor to describe the *organization and dynamics of the biosphere. The subject-matter of our considerations are not organismic processes and environmental influences, but biospheric occurrences in their integral reality.*

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[2] I introduce this term with some reluctance since the word "sphere" has a somewhat mystical taint, while the concept which I am trying to express has nothing mystical about it. On the other hand, it is known that several strictly scientific terms include the word "sphere" where the mystical coloring is entirely absent. Thus, for example, "atmosphere" brings nothing "spherical" to mind. It is also true that "sphere" literally means "globe," "ball," but it is used also in a less specific connotation to mean "field" or "realm."

The biosphere, although an undivided unit, still is not structureless. It is differentiated along various dimensions. In the biosphere two definite directions can be distinguished: autonomous determination or organismic government and heteronomous determination or environmental government. These two directions do not exist independently but only within the biospheric happenings, in other words, as components of the biological total process. Both directions extend to the very limit of the biosphere. At one pole of the biological total process, the autonomous determination is the most potent one, and it extends to the opposite pole in the way of a gradient of decrease (see Figure 4). At the other pole the heteronomous factor is the prevailing one which extends as a gradient of decrease toward the opposite pole. The two trends are like two currents of opposing directions, inseparably united in the total dynamics of the biosphere.

According to the dominance of one or the other determinant the biosphere is roughly differentiated into two fields. Those factors which are prevalently under autonomous government constitute the organism or self or subject, while the factors which are prevalently under heteronomous government form the objects or the environment. The words "subject" and "object" express very aptly the difference which I have in mind. "Subject" is that factor which governs, "sub*jects,*" the raw environment.[3] "Object" means that which is "thrown before" the subject, but also that which opposes, offers resistance, i.e., "ob*jects*" to the subject's influences. It is the non-system-determined, heteronomous factor. The differentiation of the biosphere into subject and object is the basic organization of the biosphere and forms the foundation for further structuralizations.

The single factors have no fixed position in the biosphere. Processes which, at a given moment, stand prevalently under environmental government may at the next moment come under prevalently organismic government.

Strictly speaking, one cannot generalize and state to what extent a given type of biological occurrence is organismically or environmentally governed. The exact value of this ratio can be determined only in specific instances. There is, in other words, a continuous flux between the two poles of the biosphere.

THE DERIVATION OF THE FIELD OF CERTAIN SCIENCES FROM THE BIOSPHERE BY PARENTHETIC EXCLUSIONS

The integrated totality of biospheric occurrences constitutes the world as it is lived by us. The other realms

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[3] The meaning of the word "subject" is twofold. Sometimes it is used

which various segmental sciences study are derived from this total field. The fields of such sciences have no independent existence and they cannot be factually "separated" from the total context. They are derived from the total field not by *isolation,* but in such a way that we *arbitrarily disregard certain features of the biological reality*. Such a procedure can be called *"Einklammerung"* —"placing in parentheses"—a term which has been used by Husserl with a somewhat different connotation. It would not be correct to state, for example, that the phenomena which the physiologist deals with are *somatic processes in pure culture*. What the physiologist observes are certain integrated biological processes, certain biospheric occurrences; he, however, places in parentheses certain features of these occurrences.

The following scheme visualizes the derivation of the subject-matter of various segmental sciences (see page 105). The total field of integrated biological occurrences, the biosphere, forms the realm of the primary reality for us. We do not come in contact with the world in any other way than by living it. The study of biospheric occurrences in their integral reality without the parenthetic exclusion of any of their features could be called *biology* in the broad sense of the word. Such a discipline would be made up of two types of proposition. 1) Gen-

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to mean that which is subjected, the *subjectum*. In certain philosophies of the Middle Ages the word was used with this connotation. At the present time the term applies almost universally to the "subjecter." The term is used here in this latter sense.

eral propositions with regard to the total field, as the statements made by us that in the biosphere there is a basic differentiation into subject and object; that a main trend of the biological total process is a trend toward increased autonomy, etc. 2) Propositions referring to single occurrences in the biological total process with emphasis on the meaning and significance which these single processes have in the biological total process.

As mentioned before, the biosphere is roughly differentiated into an autonomous factor or subject and a heteronomous factor or object of the environment. Some sciences derive their field by making parenthetic exclusions on the subject side of the biological total process, others by making similar exclusions on the object side.

A. *Derivations from the Subject.* If one studies the subject in such a way that one disregards, or places in parentheses, (a) its symbolic features and (b) its relation to the biological total process ("biospheric reference") one arrives at the concept of "somatic processes." The science which studies them is physiology. Somatic processes have no existence of their own; they are biological processes in which symbolism and relevance for the total field are disregarded. Let us take for illustration a rather simple behavior, such as weaving a basket. This activity is a biological occurrence. When the physiologist studies such an occurrence, he places in parentheses several features of this activity. First of all he *disregards the*

BIOSPHERE

SUBJECT
(organism)

Parenthetic exclusion	*Subject-matter*	*Science*
a) Symbolism b) Biospheric reference	Somatic processes	Physiology
a) Somatic processes b) Biospheric reference	Mental states and processes	Psychology
Symbolism	Biospheric reference of somatic processes	Biology in the narrower sense of the word

OBJECT
(environment)

Parenthetic exclusion	*Subject-matter*	*Science*
a) Symbolism b) Biospheric reference	Physical properties	Physics, chemistry
a) Physical properties b) Biospheric reference	"Ideas"	Psychology
Symbolism	Physical environment	Ecology? *Umwelts-lehre?*

symbolic functions which have an important role in controlling or governing such activity. That is, he excludes, or better ignores, such things as perception, memory, choice, judgment, conative functions, and cultural tradition, which without doubt play a part in such an activity as the weaving of a basket. Furthermore, he disregards the reference of this occurrence to the biological total process. Such reference has essentially two directions: namely, a subject reference and an object reference. The subject reference, in our example, is that the weaving is not unmotivated, but satisfies some need in the person. Such need, furthermore, is understandable only in the total context of the subject organization. The object reference of the occurrence consists, in our example, in that one does not simply move the fingers but is making a *basket,* transforming environmental raw material into a product. That which remains for the physiologist after such parenthetic exclusions are muscular contractions and their nervous coordination.

If one places in parentheses the somatic processes and the biological references, one obtains the concept of mental processes. The term "mental processes" is used here intentionally, instead of the term "symbolic processes." Symbolism is substitution and therefore the symbol always has a reference to something outside of itself. The symbols of psychological life refer to those realms which are beyond consciousness—that is, either to the environment or to the states of the person. Certain types of psychologies, however, deal with conscious phenomena as if they were complete in themselves, that is, the referents of these phenomena, which transcend the realm of consciousness, are disregarded. The Titchenerian type of psychology, for example, did this in a very consistent way.

If one places in parentheses only the symbolic aspect of the biological occurrences, one is in the field of biology in a narrower sense of the word. The term biology is, as a rule, not used in the broad sense given to it in these pages, namely, to denote the study of life in its integral reality. Even those biologists who have adopted the holistic way of thinking usually exclude the symbolic processes from the field. For example, Bertalanffy[4] states: "Biology is a science of the living organisms as objects of the outside world in space—while the inner world which they may have, we refer to another science, to psychology." Other biologists theoretically include psychology in the field of their studies, but in their detailed considerations the psychological factors are still largely ignored. But even in this restricted sense biology is broader than physiology since it relates the processes studied to the total life activity. Nest building, the migration of birds, and so forth lie in the field of biological consideration, while the physiologists are interested only in such activities as the coordinated changes of muscle contractions. Lactation is an occurrence in which the biologist is interested, while for the physiologist this represents only a secretion of the mammary glands. The subject-matter of biology, in the narrower sense, can be defined as a study of the biological reference of somatic processes.

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[4] L. von Bertalanffy, Theoretische Biologie, Berlin, Gebrüder Bornträger, 1932, vol. 1, p. 2.

B. *Derivations from the Environment.* Other scientific fields are derived by parenthetic exclusions of certain features of the object side of the biosphere. Objects which form the environment are factors which are mainly under heteronomous, that is non-organismic, government. The factors which ob*ject* offer a resistance to organismic determination. "Environment" is not identical with "surrounding world." The surrounding world can only be called environment when it is in *interaction with the subject,* when it actually ob*jects* to it, when it participates in biological happenings. The oxygen of the air is an environmental factor for man, while the atmospheric nitrogen is environment to a much lesser degree and approaches the concept of physical body. Environment is not a physical but a biological concept. This biological environment is the original objective (objecting) reality from which other fields may be derived by parenthetic exclusions.

If one places between parentheses the symbolic features and the biospheric reference of the biological object, one obtains the concept of physical objects, that is, matter and energy. The symbolic features of the environmental objects are, for example, their sensory qualities like color, sound, taste, etc. The physicist is not interested in colors but in light waves of various wave lengths, not in sounds but in the vibrations of air and other bodies, not in the sweetness or bitterness of the object but in its chemical structure. Classical physics disregards also the biological reference of the object. Biological objects are such things as food, enemy, hiding place, material for nest building, and also such objects as houses, furniture, books, money, and so forth. These objects do not exist as such for the physicist. For the physicist, after the parenthetic exclusion of symbolizations and of the biological reference, there remain only matter and energy.[5] The biological reference of the object points in two directions: subject reference and object reference. For example, the subject reference of food is that it serves as nourishment for the organism. Environmental objects also have certain object references which are biological in a certain sense and which are excluded in the considerations of physics. Between the objects food, plate, spoon, fork, knife, there is a biologically significant relationship which cannot be expressed in physical terms. Yet these objects are related not, as one used to state, in a logical sense, but in a biological sense, since they participate in the same biological occurrence, in the process of taking food in the conventional way of Western culture.

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[5] It is interesting to note that in linguistic expressions which do not follow the artificial abstractions of science, but often remain closer to life, even the terms for abstract concepts have a strong biological taint. One says in English "it matters" or "it does not matter." Used thus, matter would be "that which matters," "that which has a biological significance."

why not philosophy?

The parenthetic exclusion of the physical properties and of the biological references of environmental objects leaves "ideas" for the investigation of the psychologist. We do not call them symbols since their symbolic and biological references are disregarded. The field of such psychology is made up of symbols derived from both the object and subject sides of the biosphere. They are, however, not dealt with in the older type of psychology as representative, substitutive phenomena, but as phenomena having a field of their own: as consciousness-immanent phenomena.

By the parenthetic exclusion of only the symbolic feature of the subject one obtains a concept of physical environment. Certain forms of ecologies tend to restrict their studies to this aspect. They study the biological reference of the physical environment.

We, too, are making one parenthetic exclusion at present, namely, the exclusion of the social reference of the individual organism. We will reconsider our statements later with reference to social relationships.

At the present time the partial sciences are not so strongly segregated as our scheme would indicate. For example, the functional school in psychology makes efforts to take into consideration the biological reference of mental processes. Physiological psychology takes into consideration some of the physiological functions, namely, the sensory processes. In modern quantum-physics the role of the subject, the observer, is considered a rather important factor. Such a broadening of the field of partial sciences is not an entirely favorable sign. These sciences have developed their own conceptual schemes and when new factors are admitted into the originally circumscribed field one tries to force them into the old conceptual scheme which is too narrow for the broadened field. The result is a deplorable confusion of concepts. Personality phenomena are often described in merely psychological or merely physiological terms, until no scientist knows what the other scientist is talking about and one becomes uncertain even of the content of the concept one uses oneself.

The departmentalization of the biological sciences has, of course, a practical value and some kind of departmentalization will probably always be necessary. Present difficulties could be eliminated if the segmental sciences were oriented toward biology as a central field. The desirability of the biological orientation has been already pointed out with regard to psychology (page 81).

It would be rather interesting to show that not only the sciences but also various philosophical systems are based on certain parenthetic exclusions of one or more features from the total biological happening. Take, for example, idealism. Idealism makes the same parenthetic exclusions as does psychology and arrives at the concept of "idea." Philosophical idealism, however, makes a further step; it makes the idea the only true existence (ὄ ὦν) while the rest of the world is illusory, non-existing (μὴ ὦν). Thus one comes to the problem of being and appearance, *Sein und Schein, Noumenon und Phenomenon.* Realism, materialism, and other philosophies all make characteristic exclusions.

It would indeed be a fascinating task to trace the development of the various philosophical systems in order to discover what parenthetic exclusions they make of the biological total process, how they try to make abstract features absolute, how by a tremendous intellectual effort they attempt to make the system self-consistent and to account for the total field of phenomena by abstract features—which is, of course, impossible. Such a study would further an understanding of the history of philosophy from a biological point of view.

A biological orientation, that is, the considering of the biological total process instead of some abstract aspect of it as the original reality, offers very interesting possibilities for philosophy. Certain philosophies show a trend toward such an ideal (as Whitehead's philosophy).[6]

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[6] The system of Klages, which is called biocentric, exaggerates the conflict between what he calls *"Geist"* and *"Seele."* The two are, for him, antagonistic forces. The *Geist,* according to Klages, penetrates from the outside (ϑύϱατεν) into life like a wedge, causing there a fundamental split.

THE SYMBOLIC ELABORATION OF THE SUBJECT-OBJECT RELATIONSHIP: SELF-AWARENESS

It has been stated that the biosphere is roughly differentiated into a subjective component or self and an objective component or environment. In order to avoid conceptual and terminological confusion let us clarify these concepts. By subject, or self, I do not refer to a merely psychological factor but to a biological one in the broadest sense of the word. We may define the subject as a group of factors standing prevalently under autonomous government. This self is symbolically elaborated by the organism and then appears as self-awareness or consciousness of self; this is what psychologically we experience as ourselves. Thus we may define the self as the biological subject, while the symbolical representation of it we may call self-awareness or consciousness of self. Since the self-awareness is the conscious image of the biological subject, the features which can be observed in this conscious phenomenon are good diagnostic indicators of what is going on in the biological subject. Thus some of the statements which were made with regard to the subject necessarily hold true also with regard to the conscious self. For instance, it was mentioned previously that the biological subject is not restricted to psychosomatic factors, but extends far beyond the body. So also does self-awareness. Those psychologists who have studied self-awareness always stress the point that not only the perception of our body and not only our psychological activities are included in what we experience as ourselves, but also many other factors such as our clothes and our property. James, among others, gives a good description of the extension of the self-awareness over objects outside of the body.[7]

On what basis do we include "external" factors in our self-awareness? Why does our property seem to belong more to us than some other object of the environment? The reason is the same as the one which accounts for the inclusion of any factor in the biological self. My property has a closer relationship to my personality because it is subjected to my government to a larger degree than another object of the environment. One can give many examples which clearly demonstrate that we ascribe a given factor to ourselves or to the external world, respectively, on the basis of whether it is prevalently under autonomous or heteronomous government. This may be exemplified by what happens in the learning of skills. For instance, when one first learns to ride a horse, the horse seems to be a foreign object and we must make an effort to stay on it. When we become skilled, however, we feel almost one with the horse for now we are governing the process of riding.

There are differences of degree of autonomy between the various factors which we include in our self-awareness; my body remains something which always belongs more intimately to me than, for example, my property. There is no absolute separation between the biological subject and the environment and, correspondingly, there is no sharp limit between the experience of the self and the outside world. There are only *degrees of ego proximity and ego distance. The degrees of ego proximity and ego distance are the symbolic expression of the gradient of autonomy and heteronomy* which was discussed previously (see Figure 4). This is another example of the reflection of the biological organization on a symbolic level.

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[7] William James, The Principles of Psychology, New York, Holt, 1890, vol. 1, chapter 10.

The single factors in the biosphere have no fixed position in the subject-object dimension. There are continuous shifts to and fro between the two poles. So also on the psychological level: the same factor may at one time be ascribed to the outside world and at another time to the psychological self. When, for example, the organism loses control over a factor which usually stands under its autonomous government, this factor will be excluded from the self also on the symbolic level. A paralyzed limb does not seem to belong to ourselves to the same degree as the healthy limb over which we have complete control. Or, to give another example, in running down a hill we may want to make a sudden stop, but the body is carried further by inertia; it is experienced to a certain degree as estranged from the ego. In certain conditions the estrangement of factors which usually belong to the ego is very impressive. Such is the case, for example, with perseverations of rhythms and melodies, compulsive and obsessive experiences, states of depersonalization, and even more strikingly in the so-called "loss of ego reference" which is observed in certain forms of schizophrenia. I have discussed the latter phenomena in detail elsewhere.[8] Patients with such symptoms may experience the whole body or part of it as dead, as not belonging to the person; they feel that their thoughts and emotions do not arise from the ego, that their movements are not accompanied by a feeling of spontaneity; they experience themselves as influenced by outside forces. The term "loss of ego reference" refers to a disturbance on the symbolic level. This complex of symptoms indicates, however, that certain factors of the biological subject organization are no longer under the government of the total organism, but they have fallen out or become segregated from the biological total process. They have been segregated possibly because they are incompatible with the rest of the personality.

THE RELATIVE AUTONOMY OF THE CONSCIOUS SELF: A DISCREPANCY IN THE SUBJECT-OBJECT ORGANIZATION

With the conscious elaboration of the biological subject-object relationship, a peculiar split arises in the subject organization. It is a remarkable fact that we exclude from our self-awareness certain factors which are very important components of the subject. I do not refer here to pathological exclusions like compulsive phenomena, loss of ego reference, and the like, but to a fact which is characteristic of the human personality organization in general. One or two examples may serve for illustration. When we act under the influence of strong affects, we feel that we do not have entire control over our actions, but seem to be carried away by the affect or passion as by a foreign force. The expression "passion" has a definite reference to passivity. When we account retrospectively for such actions we may use expressions such as "I was not myself" or "I was beside myself." Another example is that state of inspiration in which ideas seem to come from the outside while one experiences oneself as a passive receiver. The words, "inspiration," *"Einfall," "Eingebung,"* refer clearly to the fact that one feels oneself passive as if ideas were "given to one." Such states have often been ascribed to supernatural forces ("divine inspiration," *"göttliche Eingebung,"* "intuition").

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[8] A. Angyal, The experience of the body self in schizophrenia, Archives of Neurology and Psychiatry, 35:1029–1053, May 1936.

It is beyond doubt that affect, inspiration, and similar experiences originate from our personality, that they are activities of our organism. Why then does one not experience them as part of oneself? The important fact is that such processes—although they are determined by the autonomy of the organism—are not governed by our *will.* In order to clarify the meaning and origin of the concept of "will" we should recall that the biological total process is differentiated into an autonomous component or subject and a heteronomous component or environment. In the psychological realm the subject is elaborated symbolically as the consciousness of self. Now, it is a highly significant fact that the conscious self, which is only a part, namely, the conscious or symbolic part of the biological subject, *tends to establish its own autonomous government. What we call "will" represents the autonomous determination, the self-government of this narrower conscious or symbolic self.* The symbolic self becomes a state within a state. Thus a split is created within the subject organization.

This split is greatly aggravated by the fact that the symbolic self tends toward hegemony, tends to take over the government of the total personality, a task for which it is not qualified. It was previously mentioned that the main value of the symbolic process is an economic one. We have symbols which give us information about the environment and symbols which indicate the subject's states and needs. Many problems of living are solved, not by a direct interaction between concrete individual and concrete environment, but between symbols of the individual and symbols of the environment. Because of the high economizing value of the symbolic function, the organism tends to *utilize it to excess.* This is the source of the trend of symbolic functioning toward a hegemony over the total personality. But the psychological self is not qualified to govern the total organism. It is not qualified for the task mainly because of two reasons: first, because the conscious self is *not* an entirely *reliable* image of the subject and, secondly, because *only a small part* of the biological subject reaches the level of symbolization while a great part of it does not become conscious at all. That the symbolic elaboration in general is not a perfect one has been discussed previously. The imperfections of symbolic representations are manifested as distortions, as illusions, in the perceptual, mnemonic, emotional, and conative fields. Thus the symbolic information which we obtain with regard to ourselves—as also with regard to the environment—is not an entirely true picture of reality. Very frequently it is a highly idealized and distorted picture. Furthermore, only one part of the biological total process is represented psychologically. A greater part of it appears in hazy images or does not appear at all, as is the case for many of the functions of our internal organs. Thus when the psychological self attempts to govern the biological total process on the basis of *unreliable* and *insufficient* information, it may bring about great damage and suffering to the organism. The conscious self, when it oversteps the realm of its legitimate influence, may become a destructive factor.[9]

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[9] Thus the recent anti-intellectualistic movement, which is a rebellion against the tyrannic domination of the "mind"—although it is an exaggerated point of view since it neglects the great economizing value of symbolic functions—is to a certain degree justified. A powerful ex-

The relative separation of the psychological self from the rest of the total organism justifies, to a certain degree, a distinction made by psychoanalysis, namely, that between the ego and the id. The id refers to personality functions which are not psychologically governed, which are not directed by conscious will. The ego refers to the psychological self.[10]

There is also considerable truth in the psychoanalytic theory of repression. Repression is a factor which aggravates the split between the psychological self and the rest of the personality. Repression can be defined, as a first approximation, as an inhibition of the symbolization of certain personality factors. The inhibition may be due to the incompatibility of a personality factor with the psychological self. Inhibition of symbolization, however, also arises as a useful selection between relevant and irrelevant factors (range of attention). The lack of symbolization, however, *is not merely a function of inhibition, but a more fundamental incongruity between total organism and the psychological self,* because the psychological self represents only a small part of the total organism. Only part of the biological total process is symbolized by man in his present stage of evolution.

The split between the conscious self and the total or-

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ponent of this trend is Klages, who regards the mind as a factor which *disturbs* living, as a *Lebensstörung.*

[10] Some differences between my definition and the psychoanalytic one will be discussed later. For example, I do not assume an unconscious *mental* activity.

ganism becomes even more marked through the fact that not only do certain personality factors fail to reach the level of symbolization, but also that certain symbolic factors do not penetrate into the depths of the personality. They do not spread out into the total personality, but remain segregated on the symbolic level. *This phenomenon is a counterpart of repression. It is a resistance of the total personality against the acceptance of certain symbolic facts.* Although we may know quite clearly that something is not good for us or that it is unreasonable, we still cannot help doing it. This is an extremely important and difficult problem in the therapy of personality disorder. We see again and again that the patient has perfect insight on the psychological level, but this insight does not penetrate sufficiently into the personality to change his behavior. The relative segregation of the symbolic self within the organism is perhaps the most vulnerable point of the human personality organization.

SUMMARY

Organism and environment are not morphological entities which can be separated in space. It has been indicated that the consideration of the organism and environment in morphological terms leads to such logical entanglement that the concepts of organism and environment are made useless for scientific purposes. Since life is a dynamic entity it appears necessary that the two fundamental factors involved in the life process—organism and environment—be defined in dynamic terms. Thus we may speak of organismic or autonomous government, ⓐ and environmental or heteronomous government, ⓗ Every biological process is a resultant of these two factors and can be expressed in terms of the ratio *a* : *h*. The relative values of *a* and *h* differ greatly in the various manifestations of life. Exclusively organismic and exclusively environmental determinations do not exist. They are only concepts of limit. They mark the two opposite poles of life. Both types of government (environmental and organismic) extend from one pole to another in the way of a gradient of decrease.

The life process does not take place within the body alone, but includes the intrasomatic and extrasomatic happenings. Every process which results from the interplay of organismic autonomy or environmental heteronomy is a part of the life process, irrespective of whether it takes place within the body or outside of it. The realm in which the life process takes place has been termed "biosphere." Our purpose in the following chapters will be to study biospheric occurrences. The study of biospheric occurrences in their integral reality may be called biology in the broadest sense of the word. The fields of various sciences are derived from the biosphere by parenthetic exclusions.

The biosphere is roughly differentiated into subject (organism) and object (environment). Those factors which are prevalently under autonomous determination form the subject. Those which are prevalently heteronomously determined form the environment.

When the biological subject is symbolically elaborated by the organism, it appears as self-awareness or consciousness of self. There is a strong tendency in the symbolic or conscious self to establish its own autonomy within the total organism: a state within a state. This creates a split in the personality organization which is greatly aggravated by the fact that the symbolic self tends to take over the government of the total personality, a task for which it is not qualified. The reasons why it is not so qualified are: first, that the conscious self is not an entirely reliable image of the subject and, secondly, only a small part of the biological subject reaches the level of symbolization, while a great part of it does not become conscious at all. The conscious self, by overstepping the realm of its legitimate influence, may become a destructive factor. The relative autonomy of the symbolic realm within the total organism is the most vulnerable point of the human personality organization.

V. BIOSPHERIC DYNAMICS

THE BIOSPHERE AS A SYSTEM OF TENSIONS

THE way is now prepared for the discussion of the dynamic characteristics of the biological total process. The purpose of this chapter will be to define some general terms which may be useful in the study of biospheric dynamics. The discussion of more specific dynamic characteristics will be taken up in a later chapter (VII).

In our attempt to define the main concepts which are pertinent to biological dynamics we may take as a point of departure the concept of the biosphere. Biosphere is the realm in which life takes place. The biosphere is an indivisible unit and is characterized by a bipolar organization. The subject pole is given by the tendency of the organism toward increased autonomy, that is, toward extension of organismic domination over an ever increasing field of events. The object pole is represented by the resistances in the biosphere against organismic domination. Strictly speaking, this resistance is not *directed* against the organism but is due to the fact that the object components of the biosphere are not

Note: The reading of this chapter may be facilitated by consulting the table on page 166, in which the concepts to be defined are systematically arranged.

organismically centralized, but are heteronomous from the point of view of the organism. The polarity of the biospheric organization is the basis for a tensional relationship between the two poles of the biosphere, between subject and object.

The trend toward increased autonomy is only a general pattern which assumes specific forms in the various concrete engagements between the individual and the environment. Thus the organism asserts its autonomy in one way when it seeks food, in another way when it fights with an enemy, and in still another way when it tries to escape danger. These are examples of biospheric occurrences, that is, specific instances of dynamic subject-object relationships.

In each biospheric occurrence we may distinguish three features: 1) the subject which tends toward some end (seeking food); 2) the object toward which the activity is directed (food); and 3) a specific dynamic relationship between the subject and object poles of the given biospheric occurrence. The specific instances of the dynamic subject-object relationships which are present in every biospheric occurrence we may call *tensions*. A biospheric occurrence can be expressed by the symbol ($s \longleftrightarrow o$); s and o represent the subject and object poles respectively. The double arrow represents the tension between s and o. By enclosing the whole expression between parentheses we wish to indicate the unity of the biospheric occurrence in which the subjective and objective factors can be distinguished only by abstraction. The tension is not in the subject or in the object, but between the two poles of the biospheric occurrence. The concept of tension, as defined here, has not been used previously in the literature. It is therefore necessary to keep clearly in mind the definition of the term as given here and not to attribute to it other meanings. When a thirsty animal approaches the water eagerly, a tension is inherent in the process between animal and water; that is, tension is not identical either with the urge in the animal or with the "demand quality" of the water.

Tension, as defined here, is one of those "psychophysically neutral" concepts, the need for which was stressed in the first chapter. It has been pointed out there that the phenomena and characteristics of the biological total process should be described in terms which are specific for the science of the total organism and not in terms of sciences which deal with some abstract feature of the organismic activity. It is especially important to distinguish between the concepts which refer to integrated organismic happenings and those which refer exclusively to psychological, that is, symbolic, aspects, because the confusion of organismic and purely psychological concepts is a very common error. All tensions are not elaborated symbolically and experienced psychologically. Only some of them are more or less clearly symbolized, that is, consciously represented. The psychological experience of biospheric tensions could be called *interest.*

Thus we may say that between the subject and object there is a tensional state and that the organism may become aware of such tensions in the experience of an interest. The word "interest" (*inter est*) expresses rather well the concept we have in mind, namely, the experience of a significant biological relationship which *is between* the subject and the object. The concept of interest, as it is defined here, partly agrees with the common usage of this term, in spite of certain differences between our own and the general use of it. Commonly one means by interest prevalently intellectual involvements of only a moderate degree of intensity. For instance, for a situation in which life and death are under consideration, the term "interest" as commonly used is obviously too feeble, but the word in its extended sense, as here defined, can be well applied to such situations also. In spite of such deviations from the common usage, it seems preferable to adopt this term instead of coining a new one.

Interests, like psychological phenomena in general, are not independent entities. They are symbolic elaborations of biospheric tensional states; and since they reflect these tensional states they can be relied upon as fair indicators of such states. Thus, for example, in schizophrenia loss of interest is in itself a purely psychological phenomenon; it indicates, however, that the biological tensions between the subject and the objects of his environment have become less intense and less numerous, that the subject stands in biologically less significant relationships to the objects of his environment. Loss of interest indicates that the person has turned away from his environment—possibly because for one or another reason he has been unable to cope with it.

Biospheric dynamics can be described as a system of tensions. The nature and range of tensional relationships between organism and environment, hence also of the interests, change continuously. The range of tensions and interests undergoes rather typical fluctuations in the course of life. It expands at a rapid rate in childhood and usually contracts in later years. Such fluctuations of interest show marked individual variations, a fact which should be considered in compiling life histories.

Tensions are inherent in the undivided biospheric occurrence in which the subject and object factors can be separated only by abstraction. Tensions can be described, however, from various points of view. One may choose as a point of reference either the subject or the object. This involves a certain relativity comparable to the relativity in physics. A physical motion is a unitary process consisting in the change of the spatial relationship between two physical bodies. The point of reference for the description of the motion can, however, be either of the two bodies. Biological tensions viewed from the subject as a point of reference are considered as *drives*. Viewing the same tensions from the object side as the point of reference, one obtains something similar to what Kurt Lewin calls the "field forces" or "demand qualities" of environmental situations.

THE SYSTEM OF BIOSPHERIC TENSIONS VIEWED WITH THE SUBJECT AS THE POINT OF REFERENCE

A. *Drives and Cravings.* Considering biospheric tensions by taking the subject as a point of reference, such tensions appear as *drives,* for example, the drive to obtain nourishment. Drives are specific forms of expression of the self-expansive tendency of the organism. The general dynamic pattern of the organism can be considered as an undifferentiated trend in a definite direction (toward increase of autonomy). This general trend branches off into more specific channels. The specific ramifications of the general dynamic trend form the skeleton of the dynamic structure of a given organism
Such a structure is partly defined by the anatomi
physiological pattern of the given organism. Th
logical total process will express itself, for exa
quite different part processes in a fish, in a
mammal, although the general tendency is
all. Because of his anatomico-physiologica
will crave oxygen, food, some kind
and so on. The general trend of the
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being the hypothetically un

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increased autonomy which branches off into primary, secondary, and tertiary tendencies (drives), culminating in the "terminal branches" of actual behavioral samples.

The channels of dynamic expression are only partly defined by the anatomico-physiological pattern of the organism. Especially in man the greater part of such channels are built up as a result of personal experiences and under the influence of social-cultural influences. Even the anatomico-physiologically defined channels are greatly modified by the superposition of personal and cultural meanings. This extremely important aspect of the personality organization will be discussed in greater detail in the next chapter.

Now the question arises: How many varieties of dynamic trends are present in man; in other words, what are the basic human drives? The question has been raised by many students of personality and has been answered in very different ways. Self-preservation and the preservation of the species have frequently been assumed to constitute the basic trends. Individual psychology assumes the will to power and the *Gemeinschaftsgefühl* as the moving forces of human behavior. Psychoanalysis traces human conduct back to basic factors: the pleasure-pain principle, the "death instinct," the reality principle. McDougall assumes some 18 basic drives ("propen-ities") in man.[1] James thought that their number must be at least 1,000. In spite of their divergencies, these assumptions concerning the number of drives or trends in man are not eventually incompatible. As the general dynamic trend of the organismic total process divides and subdivides into more and more specific channels the number of these specific expressions or drives increases. The number of drives which one finds in man will mainly depend upon the level of specificity at which one makes the survey. Using the branching out of a tree as a parallel for the branching out dynamic tendencies of the organism, we may roughly represent the dynamic structure of the organism as in Figure 5.

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[1] W. McDougall, The Energies of Man: A Study of the Fundamen- of Dynamic Psychology, London, Methuen, 1932.

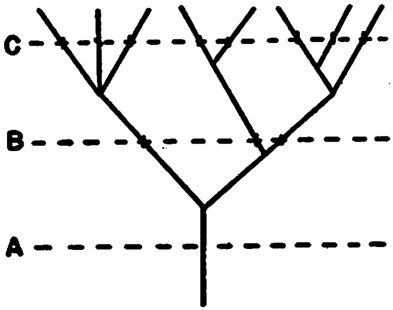

FIGURE 5

On level A one will find only a single tendency. Making a survey on level B one may find three. On level C one may count eight, and so on. On each successively higher level of specificity an increasing number of ramifications will be obtained. Thus the number of drives will depend entirely upon the level of specificity at which the survey is made, and hence these surveys will be equally correct, if the criterion on which the survey is based is kept constant. The value of such surveys, however, is very questionable. Not the enumeration of tendencies, but the correct tracing of the ramifications of the basic trend into specific channels and the study of the way in which they hang together promises insight into the structure and integration of personality. Considering the fact that the greater part of the personality structure is formed under the influence of such highly variable factors as personal experiences and social and cultural influences, we cannot hope ever to be able to describe the human personality structure in a way that would have general validity. Meaningful personality study will always be to a great extent a study of single individuals. This fact, however, does not preclude the possibility of certain generalizations which in turn serve as a compass in the study of individual cases.

The distinction between basic drives and derived ones has little value for the study of personality. Basic drives are commonly characterized as inherited and rather rigid patterns of function. We know, however, that all patterns of function—especially in man—are more or less plastic and often undergo considerable changes during the personality development. The degree of plasticity varies in different regions of the personality structure. One can roughly state that the personality structure is most plastic at the "terminal branches" (see Figure 5) while going from the "terminal branches" toward the "trunk," the structure becomes increasingly rigid. There are marked individual differences with regard to the degree of plasticity of the personality structure—a circumstance which will be considered more closely in the discussion of the integration of the personality.

Drives are the ramifications of the general dynamic trend of the organism. They are part patterns of the total dynamic pattern of the organism. The concept of drive in its present use is "psychophysiologically neutral," that is, it is a holistic concept. Drives are neither physiological nor psychological but factors which can be singled out from the organismic total process without making any abstractive distinction between psychological and physiological aspects. Drives do not always reach the level of symbolization. Sometimes, however, they are symbolically elaborated and appear in consciousness. The more or less conscious symbolic representation of drives we shall call *cravings*. We have here again a pair of concepts: the biological drives and the psychological cravings. Craving is used here as the general concept for the conscious experience of a drive while related terms like wish or desire are reserved to denote more specific forms and nuances of cravings. Thus the concept of craving will be used here as a general term for all forms of conscious conation. The phenomenon which one usually calls "will process" has—as has been indicated previously—a somewhat exceptional position among the conative functions. While drives and their symbolic representations, the cravings, refer to activities which are directed by the total organism, will processes are prevalently governed by the symbolic self, that is, by the ego.

It is not without reason that we stress the importance of a clear conceptual and terminological distinction between holistic factors and the corresponding psychological ones. There is exigent need to differentiate between the biological subject and the psychological self; between biospheric tensions and their symbolic correlates, the interests; between drives and their conscious representatives, the cravings; and between other pairs of concepts which will be introduced later. The psychologizing of holistic or organismic phenomena is probably an even more common error than their physiologizing. Psychoanalysis, through the introduction of the concept of unconscious mental activity, contributed a great deal to the psychologizing of psychophysically neutral organismic processes. According to the previous discussion, the organism may exhibit drives which are directed toward certain attainments and which can be revealed by the observation of behavior but which do not reach any symbolic elaboration, that is, of which the individual does not become conscious. Psychoanalysis speaks in such instances of "unconscious drives" and "unconscious wishes." There is no objection to the term "unconscious" drives—because they are indeed not conscious—except that the term is a negative one, since it expresses